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COMPUTERWORLD

Warehouses reborn

Revitalized in client/server environment

By Rosemary Cafasso

Data warehousing, one of the last big mainframe-driven concepts, is reemerging as a key user strategy in client/server computing.

Warehousing is finding a natural fit in client/server environments, users and industry observers said last week, because a server-based warehouse is frequently more cost-effective and flexible than a mainframe-based approach.

Fueling the interest further is the recent surge of warehouse-specific management tools and add-on products that make warehousing more practical. One example is today's expected announcement from upstart Information Advantage in Minneapolis of a suite of decision-support applications designed for warehouse environments.

"Client/server databases allow data to be brought close to and under the control of the people who want to use it," said Bobby Cameron, an analyst at Forrester Research, Inc. in Cambridge, Mass. "That's the bottom line."

Ready-to-use data

In its simplest form, a data warehouse is a database with copies of cleaned-up — and therefore, usable — production data. Most often, it is built on a relational data-

Warehouses, *page 10*

Chicago beta contract angers top developers

By Stuart J. Johnston, Ed Scannell and Melinda-Carol Ballou

REDMOND, WASH.

Microsoft Corp. is placing extraordinary restrictions on developers who are simultaneously working on Chicago and the OpenDoc object technology standard. Outraged developers are crying foul.

The nondisclosure agreements Microsoft is sending to potential developers of Chicago applications state that any person who has access to the beta version of Chicago, also known as Windows 4.0, cannot work on competing operating system products, according to companies that received the NDAs.

The agreement names OpenDoc, Sun Microsystems, Inc.'s Wabi (a Windows emulation technology) and Novell, Inc.'s UnixWare as competing products.

"Essentially, they're trying to force us to build Chinese walls in our development organization when they have said they won't do the same thing," said David Moon, senior vice president of development at WordPerfect Corp.

Moon's comments were echoed by a half-dozen sources at the largest independent software developers, who were interviewed last week.

In response to their concerns, Brad Chase, general manager of Microsoft's personal operating systems division, said, "I am not saying it is not an issue, but the only people that have contacted us are WordPerfect, and they have a concern that I am confident we will be able to work out. It is not a big deal."

Sources said the NDA language has prompted at least one developer to forward the document to the U.S. Department of Justice, which is stepping up its investigation of Microsoft for alleged antitrust violations.

Legal implications

"It sounds like ... they're putting in a requirement that would put a crimp in the rest of the industry's [efforts] to keep working on these other projects to make interoperability succeed," said Gerry Elman, an attorney at Elman, Wilf & Fried in Media, Pa. Elman, an intellectual property and antitrust attorney, is a former trial lawyer for the Justice Department's antitrust division.

"This would be consistent with a trail leading toward evidence of monopolization," Elman said.

Chicago, *page 12*

Microsoft

"... In consideration of the license granted herein, for a period of three (3) years COMPANY [licensee] agrees to prohibit any authorized individuals who have had access to the PRODUCT [Chicago] from participating in the design and/or development, feedback, or guidance of a COMPANY product of technology that is competitive with the PRODUCT, [Chicago, such as] the technology known as OPENDOC ..."

Downsizing Digital

Users to DEC: Just do it

By Mary Brandel and Craig Stedman

Faithful customers are concerned. Investors are jittery. And the clock is ticking louder than ever for Digital Equipment Corp. in the wake of its most recent and shocking quarterly loss.

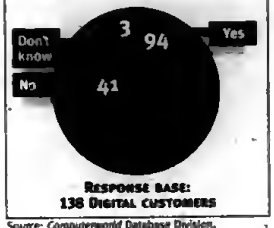
"Put up or shut up" was the overwhelming message from more than two dozen customers and analysts interviewed recently by *Computerworld*. In addition, in a separate survey of 138 Digital customers, nearly 20% expressed concern about the company's stability and its ability to compete (see chart page 26).

"If they don't show an upturn by the end of this year, they better be able to show the marketplace what Plan B is, or they're going to arguably be in a very difficult position with regard to customer confidence," said Frank Brake, director of international operations for technology business development at Newport News Shipbuilding and Drydock Co., a large Digital user in Virginia.

Digital, *page 26*

The vision thing

IS IT IMPORTANT TO YOU THAT DIGITAL PRESIDENT AND CEO ROBERT PALMER SPELL OUT A COHERENT, CONSISTENT CORPORATE STRATEGY?



RESPONSE BASE: 138 DIGITAL CUSTOMERS

Source: *Computerworld* Database Division, Framingham, Mass.

Obstacles threaten SNA router spec

By Elisabeth Horwitt and Craig Stedman

Vendor feuding, standards politics and technical hurdles are threatening the efforts of the Data Link Switching Workgroup to come up with a full-function standard for routing SNA over a TCP/IP router backbone.

The switching specification, slated for completion this fall, is a standardized way for SNA transmissions to travel over an internetworking backbone encapsulated within TCP/IP packets. The DLS Workgroup brings all major router vendors, including archenemies IBM and Cisco Systems, Inc., to the table for the first time.

Dueling vendors

However, disagreements between IBM and Cisco once again threaten delays. And that would be plain bad news for the growing number of corporations that want the option of using different brands of routers at different sites or divisions

Obstacles, *page 14*

DEVIL OR DELIGHT?

Success with joint application development doesn't come easy. Do it right and the payoffs can be big. The key is to know why JAD goes bad.

David Gammell's *team at Entex found JAD a delight*

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Is Cobol dead? One die-hard Cobol fan claims you can't build enterprise systems without Cobol, while an object development becker says the language is going the way of the dodo.

Smalltalk developer John Cunningham

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- **Contract management skills** are becoming increasingly important for CIOs. Here are some tips on where you can pick them up. *Page 90*

CW GUIDE TO LEGACY DATA ACCESS

- **Guide to Legacy Data Access:** Surrounded by users demanding easy-to-use tools with their backs up against hard-to-manage legacy databases, IS organizations are turning to vendors for help. Managers evaluate **Access, Approach, FoxPro and Paradox for Windows** as data access front ends and examine **SQL gateways**. Firing Line users report on their experiences with the latest middleware software for data access — **Cross Access**. Columnist Richard Finkelstein offers some caveats for would-be tool buyers. *Page 99*

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Executive Briefing

Long-faithful customers are starting to show doubt about **Digital**'s ability to compete and provide users with what they need. The company reported another major loss last week, just as surveys found more users saying "put up or shut up." *Page 1*

Data warehousing is finding a new home in client/server computing, which often provides a more suitable platform for these user databases. New tools hitting the market promise to make warehouses more useful. *Page 1*

Joint application development can be a wonderful thing, bringing developers and end users together to talk. But talk may not be enough, and those who have learned hard lessons from JAD experiences say you have to make the process a continuous one and show people results on a weekly basis. *Page 87*

What's the most secure job in IS? According to a recent *Computerworld* poll, network managers have the least to worry about in terms of job security, although "none" finished in second place. *Page 123*

Development on the FAA's major systems revamp is so far behind schedule that all aspects of the project are up for review and subject to change or scrap. *Page 79*

Electronic imaging has come of age, proving it can be integrated into mainstream computing, particularly in terms of document management and workflow systems. Still, most of the products announced at the Association for Information and Image Management show last week represented incremental gains. *Page 8*

Vendors of desktop mapping software are trying to position their wares for mainstream analysis of corporate data, with features such as access to popular database management systems. One piece of research shows that 85% of corporate data has a geographic element. *Page 20*

The only way electronic messaging will pave the business lanes of the information highway, as **Microsoft** CEO Bill Gates said at a messaging conference last week, will be for vendors to start delivering tools to monitor messaging traffic and manage problems, users said. The burden of managing LAN mail systems is coming to a head because businesses increasingly rely on messaging for critical communications across the enterprise and with business partners. *Page 15*

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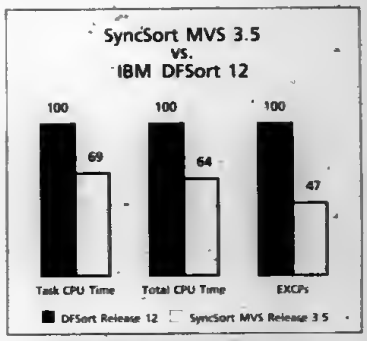

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Unisys unveils distributed OLTP

By Thomas Hoffman

■ In an effort to bridge the gap between distributed systems and their relative inability to perform robust on-line transaction processing (OLTP), Unisys Corp. next month will introduce OpenOLTP.

The combination of software and open systems standards in OpenOLTP will enable Unisys' A series and 2200 series users to share OLTP applications with heterogeneous environments, including non-Unisys Unix platforms and Microsoft Corp.'s Windows NT systems.

Unisys executives said OpenOLTP is the foundation for the Blue Bell, Pa., vendor's client/server strategy.

"OpenOLTP is the software glue that ties the entire enterprise together," said James A. Unruh, Unisys chairman and chief executive officer.

The "glue," or middleware that will link host systems with distributed platforms, will include Unisys' Mapper and LINC fourth-generation language software, Microsoft's Visual Basic, Powersoft Corp.'s PowerBuilder and any application tool set that "talks" to Novell, Inc.'s Tuxedo, according to Paul Cubbage, director of client/server software at Dataquest, Inc. in San Jose, Calif.

Unisys' distributed transaction processing directives could not have come at a better time. The computer maker's revenue, though profitable, has continued to plummet. Unisys reported $1.69 billion first-quarter revenue for the period ended March 31, compared with $1.91 billion a year ago. Net income for the quarter was $60 million, compared with $260.6 million last year.

Several users briefed by Unisys said they were eager to explore distributed transaction processing.

"We have a lot of external entities firing off transactions to us now, so there will be a good fit with cheap, generic Unix boxes," said Jeffrey L. Ehrlich, senior vice president of technology at National Data Corp., an Atlanta-based electronic payment processor for health care and financial services companies. The firm's Unisys 2200/500 mainframe handles up to 2 million health care claims each day.

Making a link

Yogi Parikh, MIS director at the Harris County Appraisal District in Houston, said his agency plans to use OpenOLTP. The product will link the district's Sun Microsystems, Inc. SPARC 1000 Unix servers used for document imaging with its Unisys 2200/400 host for OLTP and Sun SPARC 1000-based geographic information system. "We'd like to get transaction-based access from one system to another," Parikh said.

OpenOLTP hinges on Unisys' plans for its proprietary systems to have complete interoperability with the next version of Novell's Tuxedo transaction processing monitor, which is expected to ship by September.

Although Novell's Tuxedo is X/Open Co.-compliant, proprietary protocols are still used for the package to communicate with other front-end transaction processing monitors. OpenOLTP will support protocols such as Open Systems Interconnect and TCP/IP. To provide this integration, native system software on Unisys 2200 and A series hosts are being enhanced to support X/Open's Distributed Transaction Processing interfaces, according to Charles Young, program manager for Unisys' software products group.

Unisys' James A. Unruh: *'OpenOLTP is the software glue that ties the entire enterprise together'*

OpenOLTP products based on Tuxedo have been available on Unisys' U6000 Unix platform since 1991. The distributed OLTP capabilities for Unisys 2200 series shops will become available in June, while the A series components will reach the market this fall, after the next generation of Tuxedo has begun shipping, Young said.

An OpenOLTP starter kit will be priced at $1,000 to $2,000, while a full license for a high-end, eight-way 2200/900 mainframe platform will cost up to $300,000. A typical configuration for a 2200/500 mainframe will cost $9,000, Young said.

Analysts said Unisys' OpenOLTP framework puts the vendor at least six to nine months ahead of industry competitors such as IBM with its distributed transaction processing capabilities.

However, OpenOLTP is not a plug-and-play package. Users will be required to rewrite a fair portion of their host and distributed applications in order to leverage this interoperability, according to Jim Johnson, chairman of The Standish Group International, Inc. in South Yarmouth, Mass.

Still, analysts insisted the software rewrites are a small price to pay for A series and 2200 series customers who want to take a safe route to client/server computing while continuing to leverage their legacy applications.

Legent tools close in on integration

By Rosemary Cafasso

Legent Corp. last week put some meat on the bones of its distributed system management strategy by rolling out a set of software and integration tools, including a middleware offering that will enable customers to integrate these pieces.

In addition, the company extended its relationship with Hewlett-Packard Co. to jointly provide system management tools later this year.

Users and analysts said the announcements bring Legent closer to its promise of Cross Platform Exchange (XPE), the system management strategy the company announced late last year. XPE is intended to integrate several information systems disciplines, such as operations management, performance monitoring, backup and recovery and security, across a heterogeneous network.

System management

Around the world

Legent has installed close to 75,000 products at 12,000 customer sites worldwide.

"They are moving away from trying to sell the framework to selling solutions," said Richard Villars, director of network management research at International Data Corp. in Framingham, Mass.

For IS executives, XPE aims to deliver potential cost savings with a streamlined approach to system management. This would allow users to manage various network and system management functions from a single point of control.

Ideally, XPE would eliminate the need to employ experts for each of the platforms in a company by integrating the function and centralizing its management.

XPE includes a framework and services for system management, as well as a middleware component and dozens of Legent's network and system software products.

"We need the common look and feel for our tools," said David Ward, command center manager at American Greetings in Cleveland. "If XPE will allow us to do that, then we would implement the pieces we need."

A new link for tools

Last week's rollout included XPErtware, the middleware component of its XPE. It will essentially function as the glue to link various system management tools as well as the same management tool across incompatible platforms.

Initially, XPErtware will be available for Legent's Legacy Data Mover, Prevail operations management products and Paradigm problem management software — three of the seven product categories that make up XPE. Other product groups will be "XPE-enabled" and shipped with XPErtware code through the next year.

"They've set their sights on a very broad set of system management functionality, which is good because people are deluged with piecemeal solutions now," said Janet Hyland, director of network strategy research at Forrester Research, Inc. in Cambridge, Mass. But, Hyland added that "there's plenty of work to do and plenty of proving that they must do."

Legent also launched the Service Desk initiative, which is targeted at help desk management. It relies on the concepts of XPE that call for integrating functions and managing them from a single workstation. Service Desk is available now as a set of Paradigm and Prevail products, which cost about $35,000.

Beyond XPE, Legent is also shoring up its arrangement with HP, which could give it more clout in the Unix arena. Legent and HP, which have previously teamed up to provide performance management tools, last week said they will swap technologies to offer integrated operations management tool sets.

Daniel Hursh, a staff engineer at Mead Data Central, a division of Mead Corp. in Dayton, Ohio, said he wants to see Legent and HP come through on their product plans so he can save his development resources. Like many users, Hursh faces the task of finding his own methods to integrate operations management of his legacy environment and a Unix server environment.

Legent will begin selling a package that ties its Prevail/XP product line of operations management tools with HP's OpenView OperationsCenter, and HP will incorporate Legent's Paradigm problem management software into OperationsCenter. Legent officials said the first deliverables of this partnering will ship in July.

Corrections

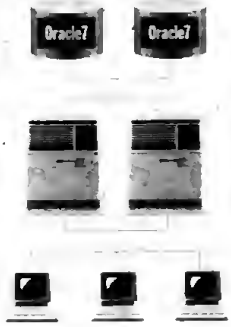
An article in the April 4 issue, "Are ISSC's days of the low bid over?" incorrectly noted the profit figure for Integrated Systems Solutions Corp. as $150 million. It should have been $50 million.

A story in the March 21 issue, "PeopleSoft port to Sybase hits snags," should have stated that subqueries, not queries, must be rewritten when a user upgrades from previous versions of Sybase, Inc.'s SQL Server database to the System 10 version. Also, the ability to define log space thresholds to preclude user updates from being suspended is an enhancement for SQL/Server.

In an April 11 industry brief, Jonathan Eunice was quoted as saying Data General Corp.'s head count may move to 5,000; it should have said 6,000.

Oracle7 Parallel Server: Breaking the Single Server Limit.

Applications built using a first-generation client/server database cannot access data on more than one server computer without a lot of extra programming. In contrast, the Oracle7 Parallel Server database enables applications to access data on multiple server computers just as if all the data was stored on a single server. Which is one reason why 9 out of the top 10 Fortune 500 companies run Oracle7 on their parallel systems.

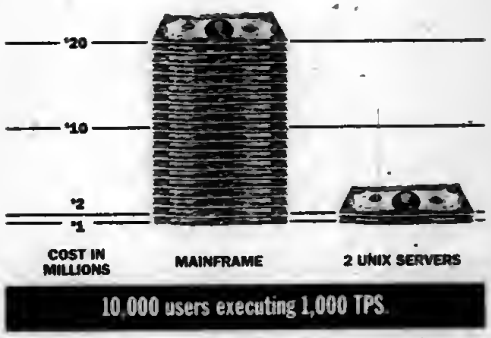


Speed and Scalability

Performance is increased simply by adding another server. Two UNIX servers running Oracle7 were independently certified as supporting 10,000 users running 1,000 TPC-A transactions per second.

Reduced Cost

UNIX computers running Oracle7 Parallel Server support more users and more transactions per second than a mainframe. The cost savings are enormous.



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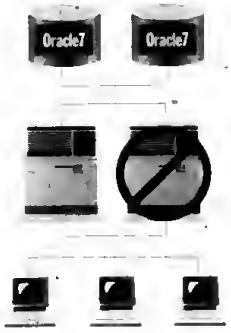

Reliability

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ORACLE

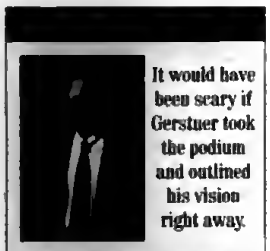
Piecing together the new IBM

IBM's first quarter results, which showed a 6% growth in revenue, shouldn't have come as such a surprise to Wall Street. IBM's top technical brains have been working on a solution to what ails the company for five years, and they are just beginning to get a few things right.

Sure, Lou Gerstner still gives tepid answers to questions on his vision for the company, but that's not the point. IBM's underlying technical approach to the customer had to start to change years ago. If Gerstner stepped up to the podium and announced he had a fresh, fully articulated idea of where IBM should go, it would be scary, like a designer of oil tankers saying he was about to produce an aircraft carrier.

IBM has been busy reorganizing its product lines to give customers a set of core pieces from which they will assemble customized, scalable systems for the future. This nonmainframe approach is a hard-learned lesson that requires mass-produced, low-cost components. Many of IBM's pieces are falling into place.

IBM has taken RISC chips and built parallel processors, dubbed the Powerparallel series. Let's not confuse them with PowerPC-based computers. The parallel systems are based on the RS/6000 engine, which is still distinct. Eventually, the two microprocessor lines will merge, and IBM PCs, workstations, AS/400s and heavy-duty parallel servers will be based on a common microprocessor family, although design variations will give servers greater throughput.



It would have been scary if Gerstner took the podium and outlined his vision right away.

Charles Babcock

IBM announced the first Powerparallel systems last September and is releasing the second set this quarter. It has expanded the communications pipeline between processor nodes from 8M to 10M byte/sec. to 35M byte/sec. and doubled the maximum number of nodes from 64 to 128.

These machines can serve as batch processors, on-line serial processors or parallel processors, depending on the nature of the work load, with 2G bytes of storage for $400,000 or less.

The parallel processors will run AIX, which brings me to my second point. IBM, unlike Digital, moved to a credible Unix strategy when it put AIX on the RS/6000, and it has stuck with it. AIX is not perfect, but it has been more reliable than the early versions of SunSoft's Solaris.

AIX is also scheduled to be redrawn into a microkernel version, although exactly how this will take place remains unclear because IBM is preparing to introduce a multiple personality operating system called Workplace OS later this year. AIX will not go away, but it's possible it will be subsumed into Workplace OS two years down the road, according to Donna Van Fleet, director of RISC systems software, speaking at UniForum last month. Talking about such a possibility would have been impossible at the old IBM. At the new IBM, technology is in flux, and product managers have to acknowledge that.

Then there's the sleeper in the IBM product line — Taligent — which, if it appears in 1995 as planned, will be an advanced, object-oriented operating system that could rival Next's sophisticated NextStep development environment.

IBM actually lagged behind other companies in moving into objects, but when it did, it thought through the requirements of a heterogeneous environment. Its System Object Model/Distributed System Object Model is the standard by which others are measured.

With Powerparallel, PowerPC, Taligent and AIX, IBM has the components with which to bid for the continued loyalty of its customers. It doesn't matter that it is no longer a candidate to take over the world. IBM is big enough, and retaining customers in the face of the competitive pressures it now faces would be a triumph in itself.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737

Next preps Enterprise Objects

Framework improves integration with relational databases

By Kim S. Nash

REDWOOD CITY, CALIF.

Next Computer, Inc. plans to announce at its developers show in June a framework that would better integrate its NextStep object-oriented operating system with legacy data stored in various relational databases, sources close to the company said.

Two years in the making, Enterprise Objects Framework essentially puts a buffer between NextStep object-oriented developers and relational databases like those from Oracle Corp. and Sybase, Inc., which generate the necessary SQL commands to retrieve information stored in relational formats.

Competitors such as Microsoft Corp. and Taligent, Inc. are said to be working on similar frameworks. Taligent pegged the first half of 1995 for shipping, while Microsoft has not specified ship dates. Next expects to ship its framework by year's end, a company insider said.

Next officials declined to comment on the product.

However, some observers seemed pleased. Making object-oriented tools work with existing relational and nonrelational data will likely make Next more appealing to mainstream information systems shops, said Alex B. Cone, president of Objective Technologies, Inc., a NextStep developer in New York.

The new product attempts to "take a lot of the grunt work out of dealing with objects," Cone said. "That makes the technology more accessible."

Other new functions include the following:

- Business and application modeling via graphical point-and-click features.
- The ability to do relational queries from object applications.
- The ability to do relational database joins across multiple databases vs. Next's adapters, which access specified data or files one at a time.

Next step

Also at its developers show, Next plans to unveil NextTime, a tool kit for creating multimedia applications a la Apple Computer, Inc.'s QuickTime.

Appealing to users

The hybrid, object/relational approach behind Enterprise Objects stands to appeal to users because data stored in popular business databases such as Oracle can be moved into an object scheme, said a software developer at a major Chicago bank.

Next's chairman, Steve Jobs, acknowledged in a March interview with *Computerworld* that Next products must work with relational technology if the company hopes to do more business with corporate IS departments.

Pencom Systems, Inc., a systems integrator in Austin, Texas, could have used Enterprise Objects in a recent project for the U.S. Department of Energy. The federal agency contracted with Pencom to build a system to track hazardous waste clean-up efforts. An interbase relational database from Borland International, Inc. anchors the application.

While NextStep already provides links to relational products, "any additional integration would only make development that much easier," said Gwen Flowers, project leader.

Oracle and Sybase representatives are expected to attend the framework's rollout. However, third-party developers who worked on the product said the database makers had little to do with the creation of Enterprise Objects.

Enhanced CC:Mail features greater management monitoring capability

By Lynda Radosevich

ANAHEIM, CALIF.

Updated CC:Mail routing software should help alleviate some headaches in deploying and managing extended messaging networks, Lotus Development Corp. officials said at last week's Electronic Messaging Association '94 conference. The soon-to-ship enhancements are also a step toward the Lotus Communications Server strategy the company outlined last fall.

Among the new CC:Mail capabilities is a wide-area monitoring tool in the form of a file that can be mailed to special mailboxes in the message network.

While several users welcomed the administration tool, they noted that because it relies on the CC:Mail network, it is unreliable if a router or post office server goes down.

Lotus also added several options for configuring how messages and directory updates get routed through complicated CC:Mail network webs. The increased topology options allow users to better manage network bandwidth, an ongoing concern for most network managers.

The routing package, called CC:Mail Router 5.1, also lets users propagate electronic bulletin boards. Additionally, Automatic Directory Exchange 2.0 features, incorporated into the router, let administrators better schedule and control when routers exchange enormous directory files.

"We've found that directory administration is the most difficult and time-consuming part of running our CC:Mail network," said Larry Quinlan, a messaging manager at Deloitte & Touche in Nashville. The company is not likely to benefit directly from the new features, however, because it built its own corporate directory outside the CC:Mail network.

Some conference attendees welcomed the enhancements but said they would like to see Lotus working on other items.

One problem is that Lotus' fax software does not automatically recognize nontext attachments and reacts by dropping the attachments before sending the fax. A Lotus official said the company will work on the problem.

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News Shorts

IBM earnings perk up

IBM's second straight profitable quarter, coupled with a revenue increase that included a 9% jump in hardware sales, suitably impressed users and analysts who nonetheless cautioned that IBM's position remains precarious. IBM chalked up $392 million in profit and $13.4 billion in revenue, easily surpassing Wall Street expectations. Positive signs included sales increases in all major geographies except Canada, an upturn in the AS/400 business and an easing in mainframe revenue decline from more than 30% during 1993 to a more palatable 12%, the company said. Pricing pressures are still squeezing IBM, which especially needs to improve the lowly 15% profit margins at its professional services unit.

Novell to use microkernel for integration

Novell, Inc. announced at its Brainshare developers conference in Brussels last week that it will use microkernel technology from Chorus Systems, Inc. in France to mesh UnixWare and NetWare onto a single microprocessor platform. Spokesmen confirmed an earlier-announced rollout time frame of 1997.

Smart batteries to juice up road warriors

Duracell International, Inc. and **Intel Corp.** last week released specifications for "smart batteries." The Smart Battery Data specification and the System Management Bus are designed to give users better information on the charge level of their batteries, better upgradability and, eventually, lower battery costs. The two companies cooperated on the design of the specification, which is supported by **Compaq Computer Corp.** and system software makers **Phoenix Technologies Ltd.** and **SystemSoft, Inc.**

IBM puts PowerPC in RS/6000s

Even as **Apple Computer, Inc.** rolls out its PowerPC-based servers this week, **IBM** is planning to put its PowerPC chip into more IBM RS/6000 workstations that will be based on the PowerPC 601 chip. IBM's move is designed in response to new low-end workstations fielded by **Hewlett-Packard Co.**, **Sun Microsystems, Inc.** and **Silicon Graphics, Inc.** in recent months.

Latest PowerPC chip ups challenge

IBM and **Motorola, Inc.** announced production of their first PowerPC 604 parts, which they claim leapfrogs Pentium in performance and will compete with Intel's next-generation processor, the P6. The entry-level 604 will run at 100 MHz. It posted integer performance and floating-point performance of 160 and 165, respectively, on the SPEC benchmark, compared with a 100-MHz Pentium's 80.6 and 100. Officials from IBM and Motorola conceded that the 604 will run Windows software only somewhat faster than the current 25/50-MHz 1486DX2 processors. Worse for the 604, it will not ship in volume until the fourth quarter of this year.

SHORT TAKES **Digital Equipment Corp.** was hit with five shareholder suits last week, following its unexpectedly large third-quarter financial loss.... **Novell** will discontinue sales of the five- and 10-user versions of NetWare 2.2 as of June 1.... **Siemens AG** selected **IMRS, Inc.**'s client/server-based financial software for a enterprisewide use, the companies announced last week. The contract's value was not released. Deployment is scheduled to take place during the next two years.... **SAP AG** landed on top of **International Data Corp.**'s ranking of client/server financial software providers last week. It earned the spot by reporting $185.3 million in worldwide revenue in 1993.

HDS readies ECL uniprocessor

By Jean S. Bozman
SANTA CLARA, CALIF.

Hitachi Data Systems Corp. is preparing a 100 MIPS or higher uniprocessor MVS mainframe to compete with IBM's 60 MIPS ES/9000 mainframe engine, industry analysts said last week.

The HDS unit, built by Hitachi Ltd. and powered by emitter-coupled logic (ECL) chips, will be water-cooled. However, it might not ship until early 1996, more than a year after IBM is scheduled to ship its first CMOS-based processors, announced earlier this month.

"We will announce within six weeks what we're going to do about interfacing with the IBM boxes," said John Clark, executive vice president of marketing at HDS. He was referring to IBM's dedicated CMOS processors, which were designed to act as database and transaction servers. HDS declined to confirm the plan for a 100 MIPS uniprocessor.

Mainframes

Hitachi, Amdahl and IBM are finding it harder than ever to turn a profit on mainframe sales. HDS had to sell 15% to 20% more mainframe and storage gear to keep revenue flat at about $1.6 billion in its 1993 and 1994 fiscal years, company executives said. Amdahl had five quarterly losses in two years and has laid off more than 2,000 employees since 1992. IBM's mainframe business has also eroded, forcing a reduction of its work force.

Traditional engine

Daniel Culhane, group vice president of systems at Gartner Group, Inc. in Stamford, Conn., said Hitachi believes it can attract user sites reluctant to use CMOS.

"They're convinced that since everyone else is going with CMOS, they will be the only ones with a traditional engine," he said. "A machine like that will be pretty potent and pretty unique."

ECL chips are more powerful than today's CMOS chips. But ECL machines generate so much heat that they have to be water-cooled instead of air-cooled. By 1996, however, analysts expect ECL and CMOS chips to be roughly equal in power.

Steve Josselyn, manager of systems research at International Data Corp. in Framingham, Mass., said Hitachi could use the souped-up ECL units to match IBM's 10-way mainframe complex with eight HDS processors. IBM's 10-way system is set to ship in the fall.

Industry analysts said Hitachi is counting on a core group of large corporations that will require the super-size ECL processors for existing "monolithic" mainframe applications. An eight-way version would produce more than 800 MIPS of mainframe power, said Rich Evans, an analyst at Meta Group, Inc. in Westport, Conn.

Packing more MIPS into a smaller space is an attractive concept, said Wayne Martin, data center manager at Dialog Information Services, Inc., an online database service in Palo Alto, Calif. "Our requirement for MIPS grows every year, and we're constantly having to go out there and look for more," he said.

Dialog's 17,000-sq.-ft. data center has 347 MIPS housed in two 100 MIPS HDS EX 100 air-cooled mainframes and one water-cooled 147 MIPS HDS GX 8310.

Hitachi also plans to prepare scalable RISC systems, due to ship in 1996, said Michihiro Hirai, chief engineer at Hitachi's General Purpose Computer Division in Kanagawa, Japan. "Hitachi is betting on [both] ECL and CMOS-based parallel systems," Hirai told journalists at the Kanagawa plant this month.

By 1996, HDS rival Amdahl Corp. is expected to field a CMOS mainframe, following the evolution outlined by IBM for its mainframes. The next generation of Amdahl mainframes is being designed by Fujitsu Ltd., which owns more than 40% of Amdahl stock.

Document imaging comes into its own

By Ellis Booker

Once an adolescent technology, electronic document imaging has finally come of age, making its way confidently to the grown-up table to be rapidly integrated into mainstream computing.

That was the prevailing impression at last week's Association for Information and Image Management (AIIM) show in New York, where up to 40,000 attendees noticed that splashy technology news was the exception, while incremental but important product enhancements were the rule.

Many of those enhancements involved quiet integration among three spheres: imaging, workflow and document management. In addition, vendors continued their resolute march away from proprietary solutions, responding to calls from users for more modular platforms that would let them pick and choose databases, text search engines and so on.

"It's a recognition of the fact that information management is a lot more than imaging," said Bruce Silver, vice president of workflow, document and imaging strategies at BIS Strategic Decisions in Norwell, Mass.

This coalescence was welcomed by users, many of whom came to AIIM this year with checkbook in hand.

"Our decision is very imminent," said Craig Badger, a senior computer systems analyst at Prudential Insurance in Liberty Corner, N.J. He was looking for a system to support what will ultimately grow to a 3,000- to 5,000-seat installation across 100 locations. Prudential plans a trial run within a month and a purchase decision within the next two or three, Badger added.

Significantly, Badger was focusing on the workflow aspect of the system first, with an eye toward imaging later. This approach backed up comments heard around the show floor that users want a single platform to handle their information management — not a vertical solution targeted at scanned-in images.

Indeed, the AIIM show had plenty examples of elegant coordination among scanned objects, workflow and documents that never existed on paper, such as memos created on a word processor or news reports downloaded from a bulletin board.

Leading this charge was Watermark Software, Inc. in Burlington, Mass., which demonstrated the only currently shipping document imaging system using Microsoft Corp.'s Object Linking and Embedding 2.0.

Copycats

Yet analysts noted that Watermark is only the first of many that will run down this road. "There's very little they do that somebody else can't," said David Black, a principal at Mentis Research in Ridgewood, N.J.

Several vendors were also demonstrating products that work with Lotus Development Corp.'s Notes. They were using the groupware either to ship images to users from production-oriented imaging systems or to add unstructured data to an imaging application.

Also, traditional imaging vendors were reaching out to document management companies or adding imaging capabilities to their own core products.

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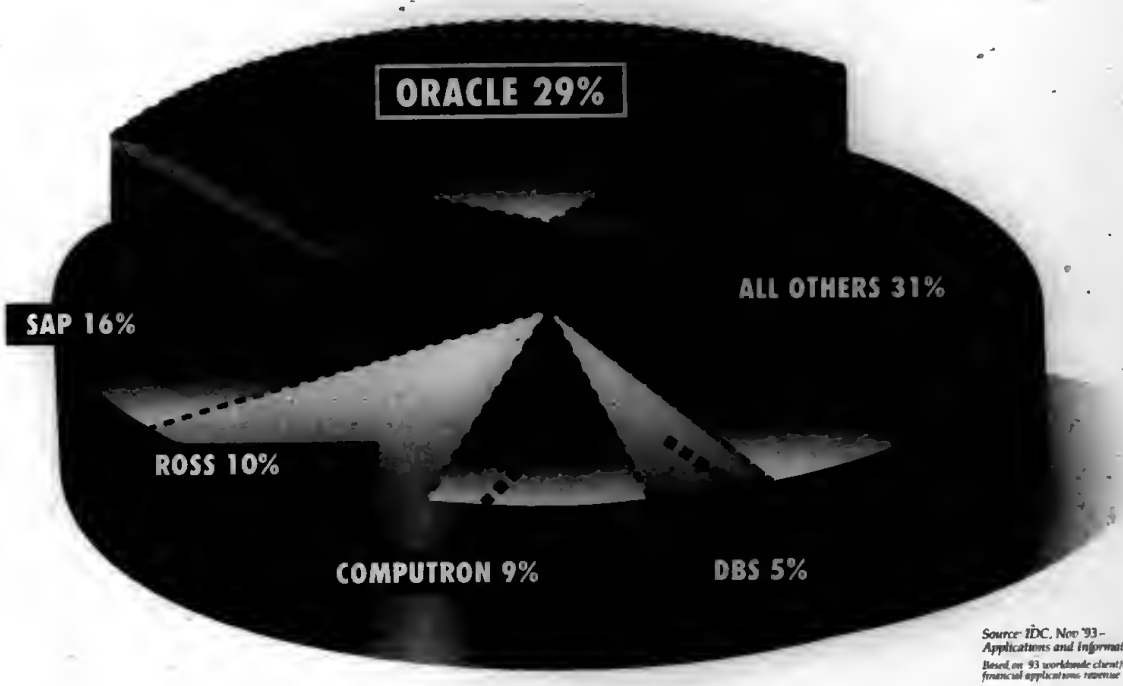

Source: IDC, Nov '93 – Applications and Information Access
Based on '93 worldwide client/server financial applications revenue

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Warehouses

CONTINUED FROM PAGE 1

base management system foundation, but that is not a requirement. The goal is to give users something they can hammer on without disturbing production data in the process.

Ideally, warehouses should fit band-in-glove with end-user query tools, which together deliver data as information to end users. The business case for warehouses is simple: They help turn data into a competitive tool.

"This is surfacing as the next major breakthrough for impacting the business, and the reason is data requirements are skyrocketing," said Jack Cooper, chief information officer at The Seagram Co., which is evaluating warehousing as a marketing tool.

"We used to track customers, but now we need to track the consumer, the demographics, the preferences, the buying habits," Cooper explained.

More choices for users is another appeal.

Some companies are bringing in server-based warehouses to eventually replace their mainframe-based equivalents. Others are adopting Unix-based warehouses to supplement existing mainframe warehouses. Babson College in Wellesley, Mass., for instance, recently built a warehouse on a Microsoft Corp.-based SQL Server by pulling data from production programs residing on an older Digital Equipment Corp. VAX.

Until recently, warehousing's biggest moment was in 1991, when IBM launched Information Warehouse, a mainframe-heavy plan that was adopted by many IBM shops. But overall interest in warehousing dwindled, in part because the focus was on enterprise-scale implementations that were frequently time-consuming and difficult to implement.

These days that story is being rewritten on client/server platforms, which give users the option of deploying relatively cheap warehouses on a variety of Unix-based servers.

"A few years ago, the databases on client/server platforms couldn't handle 100-plus gigabytes well, and now they are able to," said Kevin Strange, a program director based at Gartner Group, Inc.'s Santa Clara, Calif., office.

Tracking cost comparisons between server and mainframe warehouses is tricky, analysts said, because prices are determined by differences in user environments.

Seagram's Jack Cooper: *'Data requirements are skyrocketing'*

But, users said that for some applications, costs for server-based warehouses can be compelling. Brenda Moncla, manager of data architecture at Hughes Aircraft Co., estimated that a recently installed Red Brick Systems warehouse on an IBM RS/6000 could show as much as an "80% reduction in operational costs" compared with Hugh's mainframe-based ad hoc reporting system.

George Ferguson, program manager for Hewlett-Packard Co.'s Open Warehouse program, said a mainframe-based warehouse could top $1 million, whereas a 10G-byte departmental warehouse would cost from $150,000 to $400,000, depending on the software, hardware and consulting services selected.

In addition to the platform basics, the increasing number of available warehouse management tools is a big factor in data warehouse adoption. Management tools are needed to move, clean and stage the data on to smaller platforms — essentially providing mainframe-class control and reliability in the newer environment.

HP just announced the Intelligent Warehouse Solution, a collection of tools and services priced from $120,000 to $400,000, to map out and implement a warehouse. IBM also plans to move management tools into general availability. Information Builders, Inc. last week said the next major release of its Enterprise Data Access/SQL, slated for June, will include warehouse management features.

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MICRO FOCUS®

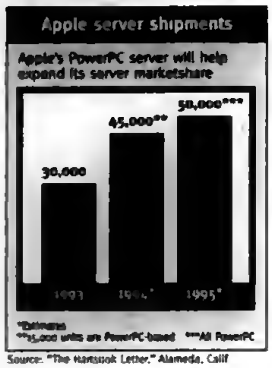
Apple pins server hopes on PowerPC

By Michael Fitzgerald

■ Apple Computer, Inc. today will attempt to find its way back into the server jungle, but the company may find it difficult to persuade corporate users to follow.

Apple is set to unveil a client/server strategy centered on the PowerPC — including a deal with Novell, Inc. to port Processor Independent NetWare (PIN) to the PowerPC — and its plans for PowerOpen Unix. It will also announce three families of servers based on the PowerPC 601 chip: Workgroup Server (WS) 6150, WS 8150 and WS 9150.

All three will come bundled with support for redundant arrays of inexpensive disks (RAID) Levels 0 and 1, making them the first Apple releases to handle RAID. They will also have built-in CD-ROM, SCSI, Ethernet and Token Ring. The 6150 will target small businesses, the 8150 is aimed at midsize companies and workgroups, and the 9150 is a high-end server with four slots, eight bays and up to 10G bytes of storage.



Source: "The Handbook Letter," Alameda, Calif

Apple France officials confirmed the specifications, though Apple U.S. officials declined to comment on the announcement.

News of the announcement did not overwhelm users or analysts, though no one discounted it.

"Until they get native versions of PowerPC software available, it's not going to be an earthshaking announcement," said Bob Anderson, senior analyst at A. O. Smith, Inc.'s automotive products group in Milwaukee. He said Apple's current server performance was good enough for his company's foreseeable needs.

Indeed, sources said that Apple's current WS 95, a Motorola 68040-based chip, will outperform all the new PowerPC servers in the Unix environment.

The current WS 95 starts at $6,000, and officials at Apple France quoted prices that would equate to $3,448 for the 6150, $5,172 for the 8150 and $7,759 for the 9150 in U.S. dollars.

Not just one basket

Analysts said Apple does not need to make a big splash with these servers, because "it's one of a number of initiatives" for the future, said Steven L. Eskenazi at Alex. Brown & Sons, Inc. "To go from A to Z, you have to do B through Y."

PIN probably ranks as the most important piece of Apple's client/server strategy because it should give Apple a shot at providing servers to corporations with Apple and DOS PCs.

Pentium competitor

One point that could work in Apple's favor came last week, when IBM Microelectronics and Motorola, Inc. unveiled their 100-MHz 604 microprocessor. The 604 looks able to match Pentium at the high end in terms of price/performance, analysts said.

But officials at Apple France said the company does not expect to ship NetWare for PowerPC until the fourth quarter, and that may slow the impact of the new servers in the market.

PIN, while a crucial step for Apple, may not be a panacea for it. Analysts said Hewlett-Packard Co. has taken two years to create its PIN, expected to ship soon. If Apple has similar problems, or rushes a subpar version of NetWare to market, it could effectively kill Apple's client/server efforts.

"You don't need NetWare if you're only hooking up Macs; NetWare is key to fitting into the rest of the world, but if it's a mediocre network component, who cares?" said Kimball Brown, an analyst at Dataquest, Inc. in San Jose, Calif.

Cara A. Cunningham, a correspondent for the IDG News Service, contributed to this report.

Chicago beta contract

CONTINUED FROM PAGE 1

An NDA is usually justified on grounds that the company does not want developers to hand over know-how and product secrets to competitors, but it could be anticompetitive if it ties the hands of so many developers that no one is left free to work on competing products, noted William E. Kovacic, a law professor at George Mason University in Fairfax, Va.

"The key question is how much of the developer network would be tied up by the restriction," Kovacic said.

Sources at several of the software vendors confirmed that the Justice Department has received copies of the NDA. Officials at the Justice Department did not return calls by press time.

Caught in the middle

WordPerfect said it finds the NDA particularly onerous because the Orem, Utah-based company is charged with developing the version of OpenDoc that will run on Windows as well as the special code required to make it interoperate with Microsoft's competing Object Linking and Embedding (OLE) 2.0. Last month, Microsoft archrival Novell announced its intention to acquire WordPerfect.

"You wonder what the real goals of this [NDA] are," said David Coursey, editor of the industry newsletter "PC Letter" in San Mateo, Calif. "Is it to stop OpenDoc, [or] is it to cripple developers who want to put out [competing] applications on Chicago's ship date?"

Microsoft will integrate OLE 2.0 into the guts of Chicago. By limiting access to Chicago for WordPerfect and other developers that have declared support for OpenDoc, Microsoft is exacerbating the difficulty of enabling interoperability between the two systems, many independent software vendors said last week.

Ironically, Microsoft has said it would not provide interoperability with OpenDoc because other vendors that are members of the OpenDoc consortium would offer that functionality.

Information systems professionals expressed similar surprise that Microsoft would make such demands on top-tier applications developers, many of whom it will need if it hopes to establish OLE and Chicago as industry standards.

"I am not sure how far Microsoft can carry this out. There are pieces [it] needs from developers who are clearly committed to OpenDoc," said Brian Moura, assistant city manager for the city of San Carlos, Calif.

> "We are just trying to protect our technologies," said Microsoft executive Brad Chase. "I don't think [developers] would have any objections to that."

While Microsoft's proposed actions left some users grumbling that their software choices would be limited, most of those interviewed said they would have little choice but to go along.

"Would this stop us from doing business with Microsoft? Probably not. You don't want to sound like you are easy, but you have a job to do," said Peter Bavaso, IS manager at The Darby Group, Inc., a large medical products distributor in Westbury, N.Y.

Fear fighting fear

Several members of the OpenDoc consortium were quick to say that many of Microsoft's fears about OpenDoc are unfounded. In fact, OpenDoc's technologies are purposely designed to complement those in OLE, they said.

"OpenDoc is great middleware, and OLE is a publicly described interface — so how in the hell could anyone have an ethical objection to it?" said Cliff Reeves, director of object technology at IBM. "It does seem to be taking something away from users, and I mean something other than choice."

Another issue for developers is the fear that a lack of interoperability between OpenDoc and OLE 2.0, an integrally important technology to Chicago, would discourage many users from adopting OpenDoc. OpenDoc is expected to be a finished set of technologies for Windows, OS/2 and Macintosh by year's end.

Mitch Betts contributed to this report.

Anger abounds

Some independent software developers expressed anger last week over other restrictions in Microsoft's NDA for Chicago.

The requirements appear to let Microsoft choose which people work with the product. Microsoft grants a beta license for use "only by the authorized individuals described [elsewhere in the contract]," the contract language says. "Any addition of authorized individuals must be approved in writing by Microsoft."

Several developers, who requested anonymity, said Microsoft could use the clause to restrict development of competing application products.

"It would appear that Microsoft wants to establish a third-party OCX [OLE custom controls] market but does not want anybody to compete with their tools," said a source at a software firm.

"Most nondisclosures have an individual sign on behalf of the company instead of having every single individual sign," the source said.

Another developer said companies, as a result, spend too much time reading NDAs and figuring out how they can compete. "Our NDAs are just like most other NDAs in the industry in 99.9% of the cases," said Brad Chase, general manager at Microsoft's personal operating systems division.

Microsoft's NDA may also raise costs for developers because they will need to use separate personnel for Chicago and competing systems, said William E. Kovacic, law professor at George Mason University in Fairfax, Va.

Richard Kilmer, manager of systems architecture at TelePad Corp., said that providing the names of all developers involved with a beta test to Microsoft involves releasing competitive information he would not want Microsoft to know.

— Melinda-Carol Ballou and Ed Scannell

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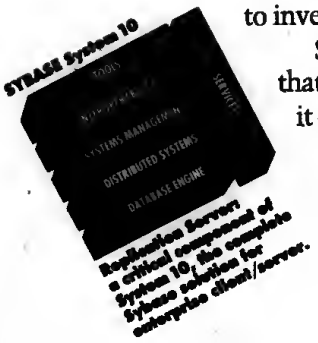

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HP broadens view

OpenView for Windows to bring interoperability to users

By Stephen P. Klett Jr.
PALO ALTO, CALIF.

Hewlett-Packard Co. today will announce OpenView for Windows Workgroup Node Manager 1.0 — the first commercial version of its Windows-based OpenView management platform. The product will allow users to pass information between Unix- and Windows-based OpenView management consoles.

This information-sharing ability is key because it gives users a simpler, more cost-effective management option for departmental workgroups, observers said.

For example, OpenView for Windows nodes can now forward alarms to OpenView for Unix nodes, which means users can set up distributed Windows-based management systems to handle local departments that report to a central Windows- or Unix-based OpenView server [CW, April 18].

OpenView for Windows will cost $1,495 per node when it ships in June. In comparison, OpenView for Unix pricing starts at $15,000 per node.

Long time coming

Users and analysts were upbeat about the Windows-to-Unix interoperability but said it was time HP delivered this functionality.

"It's about time the two can talk to each other," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "This has been a frustrating issue for users for some time, which HP absolutely had to address."

"This will give us management stations that are not only less expensive but are also less complex to use than Unix, which means less technical people can use them," said Frank Belland, senior communications consultant at Martin Marietta Corp. in Orlando, Fla. "We've been hounding HP to deliver it."

OpenView for Windows will be available through value-added resellers. It will provide systems and application management through third-party applications. For example, Symantec Corp. announced it will integrate The Norton Administrator for Networks with OpenView for Windows, which will give Windows users software distribution and inventory management capabilities.

Enhanced capabilities

OpenView for Windows Workgroup Node Manager will also include a set of tools called Visual OpenView, which can be used to create OpenView applications using Visual Basic.

Belland said this latter feature was a welcome alternative to programming applications in more complex languages such as C++. "This will allow us to build applications quickly through pointing and clicking," he noted.

HP also outlined future development plans for OpenView. Next year it plans to release a common database across Windows, Unix and NT, which will let users pass information about network devices and topologies from workgroup to enterprise systems.

In 1996, OpenView will provide common application programming interfaces that will allow applications to be ported across the three platforms.

Senior editor Elisabeth Horwitt contributed to this story.

A look ahead

HP's long-term vision for the OpenView family is as follows:

- OpenView for Windows will handle 150- to 1,000-node networks and TCP/IP and Novell IPX protocols. It will manage small PC-LANs and workgroups.
- OpenView for Unix will handle Digital Equipment Corp. and IBM legacy systems and TCP/IP networks of 1,000-plus nodes over the LAN and wide-area network.
- The upcoming OpenView for Microsoft Corp.'s Windows NT will be midway between the two systems.
- Much of the functionality of OpenView for Unix will gravitate down to the NT platform while OpenView for Windows will move to Chicago.

Workflow

Novell to tackle open document management

By Elisabeth Horwitt

■ Novell, Inc. will announce next week plans to provide a NetWare 4.x-based service engine that interconnects workflow and document management applications enterprisewide, company sources said last week.

Novell and Xerox Corp. will introduce at the Networld/Interop show in Las Vegas a jointly developed "open client/server framework for network document management," which will allow users to work collaboratively on documents across the network, according to a Novell source.

Xerox will also discuss how its own recently announced Visual Recall, an intelligent document storage, filing and retrieval system for Windows NetWare clients, will work with Novell's framework as a client application.

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The bigger picture

The broader context of the announcement, however, is how any third-party workflow or document management system will be able to hook into the workflow engine that Novell and its future acquisition, WordPerfect Corp., are jointly developing, the Xerox source said.

"Novell will create the framework, providing directory and enterprise services" to allow client workflow and document applications to "off-load the heavy lifting" such as document searches onto a NetWare file server, he added.

Third-party workflow and document vendors will be able to hook into the platform via an upcoming set of open application programming interfaces, as well as AppWare Loadable Module versions of key services, Novell spokesmen said last month.

Last month, Novell issued a paper outlining its future Novell Groupware offering. The platform will combine Novell NetWare 4.x services with key WordPerfect Office capabilities like message storage and intelligent document routing, Novell said [CW, March 28].

Novell is seeking to position NetWare as a conduit for the workflow applications, said Tom Koulopoulos, president of Delphi Consulting Group in Boston, who discussed the engine with Novell.

"The best way is to make [the platform] open; that's easier said than done because there are no standards. Microsoft, luckily, has Dynamic Data Exchange," Koulopoulos said.

Additional support

Novell is expected to announce, possibly this week, additional third-party support for its framework. Two likely candidates are Eastman Kodak Co., which has been working with Novell for more than two years on integrating Kodak's document imaging services with NetWare; and FileNet Corp., which has been discussing integration of its workflow products with NetWare, a FileNet spokesman said recently.

Obstacles

CONTINUED FROM PAGE 1

without losing the ability to route SNA and TCP/IP traffic throughout the enterprise.

First Security Information Technology, Inc., for example, is currently satisfied with the proprietary routing of SNA over TCP/IP from its 3Com Corp. routers. However, "Who knows what Cisco or Wellfleet might come up with in the future that I might want?" asked Ken Moerman, manager of network services at the Salt Lake City firm. "Without a DLS standard, I'll be out of luck."

Indeed, more and more companies are looking to mix and match routers as they feel more comfortable with their installations, said Dick Boyle, a partner at Inform Technology Decisions, Inc., a consultancy in Green Farms, Conn.

One such company is Food Services of America. "Right now, I am committed to IBM's 6611 router because they have full support" for routing SNA traffic out to remote sites, such as Food Services' 17 IBM AS/400s, said Tom Fitzmaurice, director of communications at the Seattle firm. However, "As I expand into Phase 2 [of the routing strategy], I will have the experience and can look at other vendors."

Right on target

Spokespeople at DLS member companies last week said the standard is more or less on schedule, with an initial version due out by late this year or early next year.

A potential obstruction in the DLS standards process, however, is wrangling among workgroup members about which of several versions of the protocol constitutes a real standard. The major players have all committed to supporting the DLSw standard shortly after it is finalized. However, IBM, Wellfleet Communications, Inc. and Proteon, Inc. support RFC 1434, a DLS specification that IBM submitted to the Internet Engineering Task Force (IETF) some months back. Cisco and 3Com, meanwhile, are refusing to support RFC 1434, which they claim is a very preliminary specification.

RFC 1434 compliance gives Wellfleet and Proteon their first strong SNA encapsulation products, as well as a leg up on rivals 3Com and Cisco in terms of interoperability with IBM, according to analysts.

Food Services of America, for example, has told all router vendors that it will not consider anything that is not DLS-compliant, Fitzmaurice said.

Unfortunately, the standards process may halt while the group works out how — and whether — to make DLSw a formal IETF standard. The IETF recently informed the group that it would want revision control; and some DLS members fear unwelcome changes will result, said DLS chairman Louise Herndon Wells.

The DLS group will have to consider whether or not it wants to work through the IETF at its June meeting, members said. If it does not get into a serious argument over standards control with IETF, a working DLSw document should be out this fall, and vendor products late 1994 or early 1995, Wells said. If the face-off occurs — "all bets are off."

Lacking

The initial DLSw standard will lack a couple of important features that may show up in a later release, group members said. One is prioritization, which ensures that bursty LAN transmissions do not bump off SNA sessions; another is dynamic updates of device address directories among router nodes.

Management void limits LAN E-mail

By Lynda Radosevich
ANAHEIM, CALIF.

If electronic messaging is going to pave the business lanes of the information highway, as Microsoft Corp.'s Bill Gates said at a messaging conference here last week, then vendors better start delivering tools that help monitor messaging traffic and manage problems, users said.

"Right now, there is nothing to speak of," said Peter Meggs, manager of electronic mail assurance at Telecom Australia in Melbourne.

Information systems directors face the enormous burden of managing the LAN mail systems that promise access to the highway. And the issue is coming to a head because businesses increasingly rely on messaging for critical communications across the enterprise and for reaching business partners.

Monitoring mail

Today, E-mail monitoring is not built into LAN products, and only a few third-party companies provide monitoring software. Among them are the following:

- **Automated Business Solutions**
  Park Ridge, N.J.
- **Baranof Software**
  Brighton, Mass.
- **Bear Mountain Software**
  Evergreen, Colo.

For instance, at Home Savings of America in Irwindale, Calif., the electronic messaging system sends rate quotes to brokers in the field. "It's not just 'Hi Larry, let's have lunch' anymore," said Wilfred Lee, a senior systems analyst at the financial institution.

But IS managers said they cannot provide even the simple statistics that they can gather on older, less flexible mainframe systems. Information they need but cannot provide includes the following:

- Whether messages are getting to their destinations.
- Whether the directories that help users find one another's E-mail addresses are getting updated properly.
- How much disk space the electronic post offices are using.
- What the traffic trends may be.

Like many users, Lee said his administrators cope by using the "poking around" method whereby an administrator looks in a post office's log file once a day to read the error lists.

Telecom Australia survives by developing its own tools. "We had bright university grads develop ways of queuing the post offices," Meggs said. With a 36,000-user E-mail network made up of Microsoft's Mail, Australia Telecom is the largest Mail site in the world.

Others said they use third-party functions built into products such as Soft-Switch, Inc.'s messaging switch. But these measure only the traffic that flows between messaging domains, not within the company, and do not help gather fundamental statistics for planning growth.

For their part, LAN vendors said they are well aware of the complex problems they need to solve. Lotus Development Corp. last week took an initial step and promised more in its communications server due early next year.

Microsoft has promised advanced management capabilities in its Enterprise Messaging Server (EMS), which is due before year's end. Several beta testers said they are withholding judgment.

"We're pleased with the specifications, but [EMS] hasn't reached the stage where we can tell whether they are realized yet," Meggs said.

If Lotus and Microsoft have trouble living up to their tasks, some users said they may take their business to Hewlett-Packard Co.'s OpenMail.

To tap into that opportunity, HP introduced new OpenMail management capabilities, including continuous access, at the conference. Most LAN systems require users to take the messaging server down for regular servicing. The HP systems also let end users keep their desktop clients and use HP's back-end Unix server with X.400 message transport, X.500 and directory services.

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Morass of bad news engulfs Platinum

By Rosemary Cafasso

■ Platinum Software Corp. got caught in a financial quagmire last week that could cause lingering financial problems, layoffs and ultimately a loss of credibility among its customers.

In short order, the supplier of client/server financial software announced the following:

- A decline in anticipated revenue in the $13 million to $15 million range for the quarter ended in March, instead of matching analysts' expectations of $17 million to $20 million. Platinum's stock price plunged by more than 60% as a result.
- An acknowledgment that revenue adjustments of anywhere from $6 million to $10 million would likely occur because of what the firm described as "revenue recognition problems."
- The resignations of Gerald Blackie, chief executive officer, and John Erickson, chief financial officer, as well as the resignations from the board of the four top executives.

Platinum has been an up-and-comer in the competitive client/server financial software arena. It has been selling financial software for LAN environments for nearly 10 years. More recently it began shipping a client/server version. It claims to have 300 customers for the newer platform and says 40,000 users worldwide use its full product line.

Industry observers said it appears that Platinum may have improperly recorded revenue in previous quarters.

"It looks like someone was trying to book things when they shouldn't have," said Heidi Dix, an analyst at Forrester Research, Inc. in Cambridge, Mass.

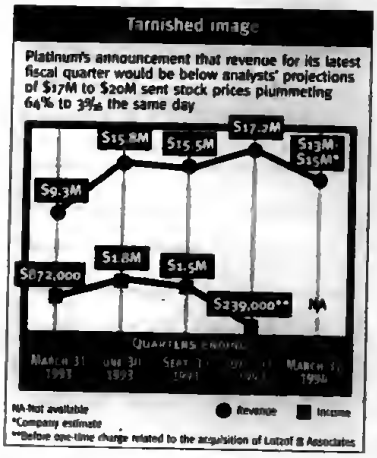
Kevin Dowling, a senior vice president at Platinum, confirmed last week that the company's accounting firm, Arthur Andersen & Co., has withdrawn its assessment of Platinum's reportings from 1993.

Examining the issue

Dick Poladian, managing partner for the Southern California region at Arthur Andersen, said, "We have people in the field looking at the issue" of responsibility for such a revenue recognition problem. "It will be a two- to three-week process to gain an understanding of it," he added.

Platinum is expecting an investigation by the Securities and Exchange Commission.

Kevin Riegelsberger, who was an executive vice president and now calls himself a member of "the operations committee running the company," said the resignations came about because the operations team felt it would better allow the SEC to perform its investigation.



Finally, Dowling said Platinum would take a restructuring charge of $7 million to $10 million in "future periods." He confirmed that the restructuring would likely involve layoffs, although he did not provide additional details. Platinum employs approximately 820 people.

Deja vu

A class action suit has been pending against Platinum since January, when it also reported that revenue would fall short of ex- pectations for the quarter ended in December 1993. At that time, the company said a customer contract that had been previously reported as revenue was withdrawn, and as a result, would affect results for that quarter.

"For a while, it will be much tougher," Dix said. "They are going to have to prove to customers that they have gained financial stability and it won't happen again."

Some observers cast last week's events in a more positive light.

"I don't think it's the end," said Martin Garvey, a senior research analyst at Meta Group, Inc. in Westport, Conn. "They need to right themselves. It took some guts, to realize some of these things and take care of it."

Apple rides PowerPC to profitable second quarter

By Michael Fitzgerald

Apple Computer, Inc. managed to walk the chasm between its PowerPC future and its Macintosh past well enough to post a profit in its fiscal second quarter. The news drew sighs of relief from analysts, who feared Apple might have poor results.

Meanwhile, the favorite dessert at Apple continued to be turnover, as two more officials left the company last week. That makes three senior executive departures in the first four months of the year.

Apple eked out a $17.4 million profit on sales of $2.08 billion, compared with $111 million in profits on $1.97 billion in sales for the same period last year. Driving the quarter were strong sales of the Power Macintosh, which Apple said sold 145,000 units in its first three weeks and was backlogged on some models. Apple also saw solid sales of its Motorola, Inc. 68000-based Macintoshes, particularly late in the quarter.

Pleasant surprise

Analysts had feared that trying to maintain sales of the lame-duck 68000 line might keep Apple in the red. "I'm breathing a sigh of relief," said Barry Bosak, an analyst at Smith Barney Shearson, Inc. "A $34 million operating profit is OK in your most trying time."

While unwilling to say Apple was safely off the tightrope, analysts generally agreed that the company looks poised to post much stronger results in the next two quarters.

Joseph A. Graziano, Apple's chief financial officer, told analysts that a number of corporations and other institutions had adopted Power Macintosh technology, including Monsanto Co., Holiday Inn Worldwide, Dartmouth College, Cornell University and the University of California at Los Angeles' Anderson Business School.

Saying goodbye

But the departures of Apple executives also made news. Most recently, Morris Taradalsky, general manager of Apple Business Systems, left to become president and chief executive officer at Micro-Net Technology, Inc., a storage maker in Irvine, Calif. Separately, Gaston Bastiaens, general manager of the Personal Interactive Electronics division, which gave Newton to the world, also departed — officially to start his own venture.

James R. Groff, vice president of LAN-based systems at Apple, was named acting general manager of Taradalsky's unit. CFO Graziano will run the Personal Interactive Electronics division until Bastiaens — who will remain to help in the transition — is replaced.

The departures follow on the heels of Randall Battat's move to Motorola. He was vice president of Macintosh Desktops and PowerBooks.

West Coast senior editor Jean S. Bozman contributed to this report.

Apple will release new workgroup servers today. See page 12.

IBM revamps sales force

By Craig Stedman

IBM is set to reorganize its sales and customer service operations along vertical industry lines, with a formal announcement expected in May, according to analysts familiar with the company's plans.

IBM has been hinting that a switch to an industry sales focus is in the works, most recently in March as part of Chairman Louis V. Gerstner's "vision thing" speech in New York. Jerome York, IBM's chief financial officer, said during a financial results teleconference last week that unspecified sales changes would be made shortly.

Bob Djurdjevic, president of Annex Research, Inc. in Phoenix, said IBM is pointing toward a mid-May announcement. But implementing the industry plan will take time. "The rollout will not be all at once. We can't expect IBM to change its coat overnight," Djurdjevic said, noting that even IBM executives do not appear to have a defined timetable.

Back to the future

Djurdjevic and other analysts said IBM still faces the challenge of converting its salespeople from a technology orientation to an industry one. But the change should benefit customers by providing sales reps with a better understanding of their individual needs, they added.

"It's moving IBM back to its roots as a business adviser," said Sam Albert, a consultant based in Scarsdale, N.Y. "When IBM grew large and complacent, it was just taking orders. It wasn't advising anybody, and it left the problem-solving to the customer."

Tom Loane, vice president of computers and communications services at Alamo Rent a Car, Inc. in Fort Lauderdale, Fla., said the changes would be sensible for IBM to make.

"You might as well have your sales reps be industry-specific because they can't know all the products in a product line that broad," Loane said. "A guy that's good at selling banking equipment isn't going to be good at selling to an insurance customer."

IBM already has industry focus in its New York and Chicago sales areas and especially in the Integrated Systems Solutions Corp. (ISSC) outsourcing unit, which markets through 16 separate industry groups, Djurdjevic said. "You can use ISSC as an example of what the rest of the company would look like" as the industry focus is expanded, he added.

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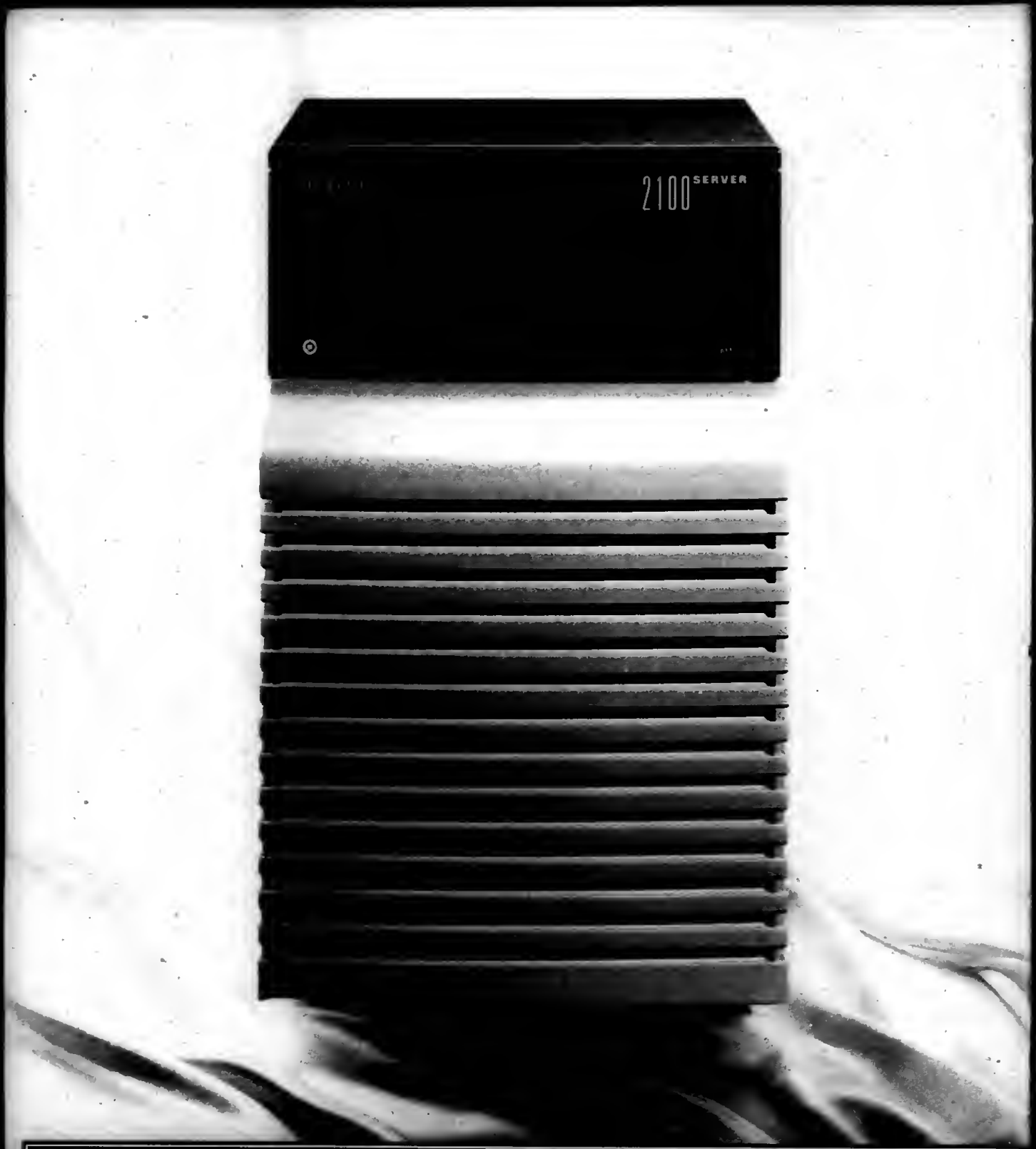

Putting Technology

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I/O (MB/sec.)	132	32	32	80
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Mapping tools reach mainstream market

By Mitch Betts
ALBANY, N.Y.

Geographic information systems (GIS) are not just for geography majors anymore. Archrivals MapInfo Corp. and Strategic Mapping, Inc. are positioning new releases of their desktop mapping products as mainstream tools for analyzing corporate data.

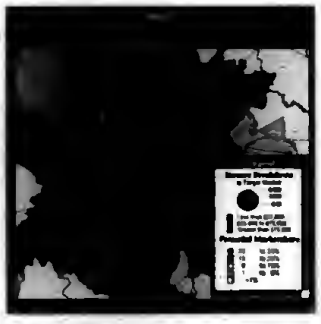
At its first-ever user conference here last week, MapInfo unveiled MapInfo 3.0, the latest version of its flagship software with features designed to appeal to business managers and corporate application developers. For example, MapInfo's SQL DataLink module permits remote access to Oracle Corp. and Sybase, Inc. databases from Unix, Windows and Macintosh environments.

In a similar vein, Strategic Mapping in Santa Clara, Calif., recently introduced its Atlas GIS for Windows 2.0, with a built-in capability called Atlas SQLink, for SQL queries to host databases.

Both vendors have enhanced their programming languages to foster integration of business and GIS applications.

On the user front, companies are starting to realize that 85% of corporate data has a geographic element — such as customer addresses and the location of the closest dealer, said Brian D. Owen, president and chief executive officer of MapInfo in Troy, N.Y.

"MapInfo and [other mapping vendors] are moving more toward the mainstream of business intelligence systems," which provide decision support for corporate managers, said Howard Dresner, an analyst at Gartner Group, Inc., a consultancy in Stamford, Conn.



MapInfo for Windows *allows demographic analysis of sales territories*

Business applications of mapping software include demographic analysis of sales territories, spotting "dropped" cellular telephone calls, insurance risk assessment and plotting the service area of a health-care provider network.

The information systems department at Mobil Oil Corp. in Fairfax, Va., built a MapInfo application for "crisis management" in the event of an oil spill or tank explosion.

The data analysis can be useful even without a map, said Tom Mulhall, an IS manager at the Federal Emergency Management Agency field office in Miami. "Thirty percent of the time I use MapInfo to come up with an answer without ever creating an actual map. We do the spatial analysis, and the answer may turn out to be a line in a spreadsheet," he said.

In fact, mapping vendors are starting to bristle at the GIS label and prefer terms such as "data visualization." Still, they have a ways to go before becoming full-fledged members of the IS portfolio. Users at the MapInfo conference were clamoring for some way to interact with the corporate mother lode of data in IBM's DB2 and IMS databases, for example.

Mulhall called the analytical features within MapInfo 3.0 "very slick," but he also pined for "real client/server performance, letting the server do a lot of the work and sending me just the data I need for analysis."

MapInfo costs $1,295 for Windows and Macintosh versions, plus $795 for the developer's tool kit and $595 for SQL DataLink. MapInfo for Unix costs $2,495, plus $1,595 for the tool kit and $1,195 for SQL DataLink.

The price of Atlas GIS for Windows ranges from $1,595 for one user to $8,995 for 10 users on a LAN.

Fitting right in, thank you.

How is it that a supposedly 'proprietary' business computer is rubbing elbows with names like Sun, Hewlett-Packard, Apple, Novell, and DEC? And in a Client/Server environment, for goodness sake!

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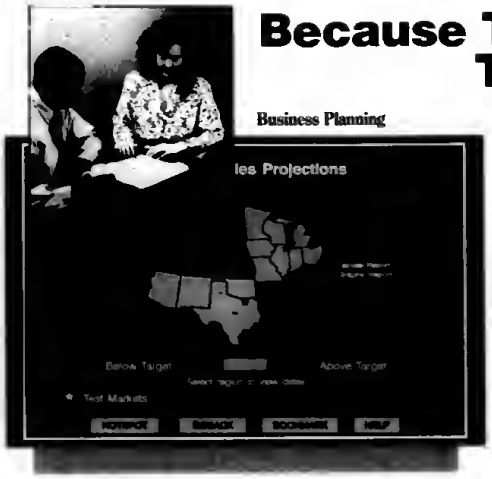

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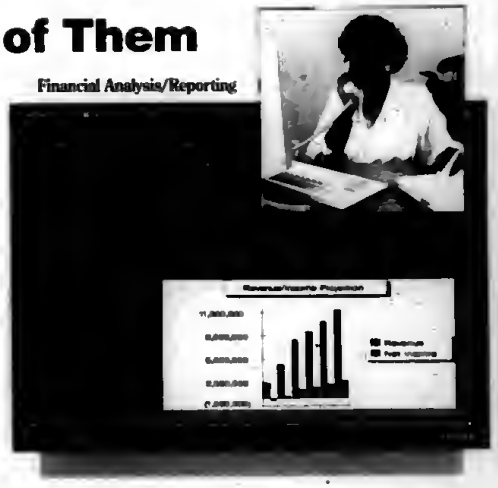

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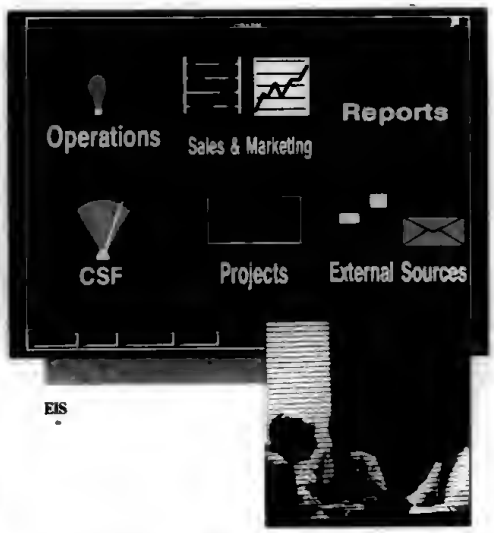

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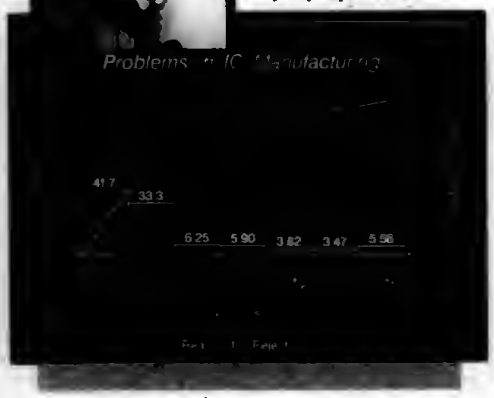

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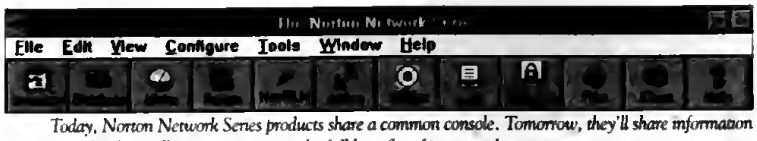

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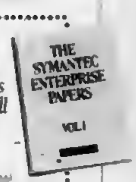

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Powersoft's record revenue tops market

By Melinda-Carol Ballou

Powersoft Corp. last week reported record revenue of $25.3 million for the first quarter ended March 31, an increase of close to 300% from the same period last year.

Industry analysts said the vendor's big bounce could be attributed to an increasingly commoditized client/server tools market, where Powersoft snatched up additional revenue that smaller vendors had tried to grab.

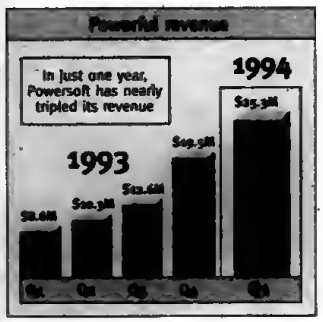
"There was a tremendous expansion of PowerBuilder Enterprise units in the marketplace. At the end of the first quarter of 1993, we had 10,500 units sold and now we're up to about 26,000," said John Gannon, Powersoft's chief financial officer.

New targets add up

Company officials attributed the $16.3 million hike in revenue to factors such as a diversified product line to target lower-end development, which included PowerBuilder Desktop and tools such as PowerViewer and PowerMaker. Also noted by company executives were Powersoft's strong third-party alliance program and a 16% increase in international sales.

But while the results boosted Powersoft's standing with financial analysts, others said it is unlikely that the company will show a comparable increase in revenue over the coming year. The market for both high-end client/server, decision-support applications and low-end desktop tools will become increasingly crowded over the next few months, industry observers said.

Earlier this month, for instance, KnowledgeWare, Inc. undercut Powersoft's PowerBuilder Desktop pricing with



a desktop version of KnowledgeWare's ObjectView client/server tools [CW, April 11].

Both Borland International, Inc. and Lotus Development Corp. are also expected to target the low-end market with tools coming out this spring. And scaling up the client/server food chain are new products from Forte Software, Inc., Dynasty Technologies, Inc. and Sybase, Inc., which will target more transaction-intensive development.

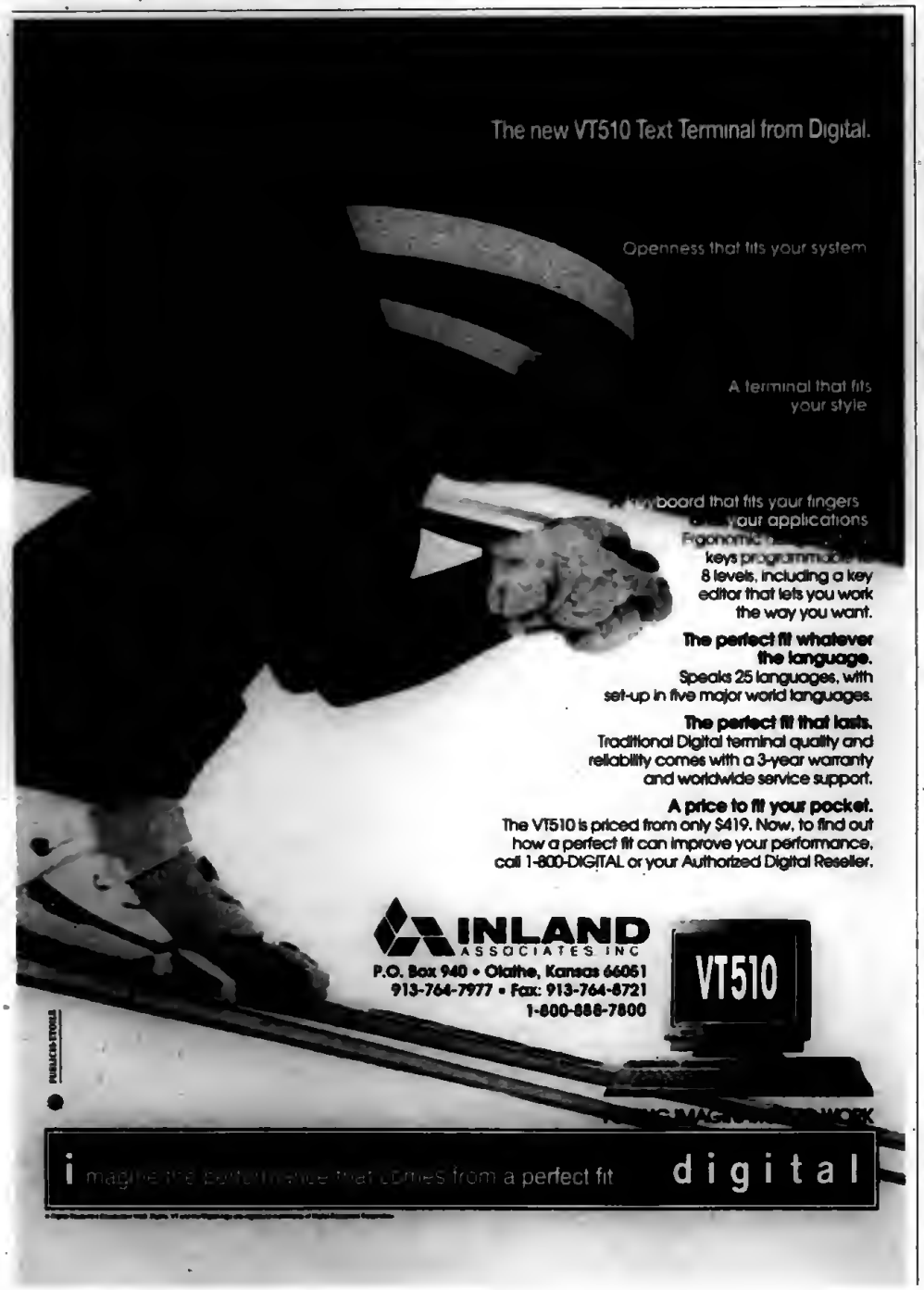
Price pressure

"Powersoft will get it from both sides," said Tim Harmon, an analyst at Meta Group, Inc. in Burlingame, Calif. "It's kind of like the Microsoft/Borland desktop wars — they reduced the profit margins to the point where Borland is now suffering pain for it. Powersoft started it, and KnowledgeWare responded. And there are going to be a lot of price pressures, which are indicative of a commodity market. I expect they'll have to bring prices down on the higher-end tools as well, and profit margins will be eroded."

Powersoft's Gannon insisted the company would not lower the $3,345 price tag for Powersoft Enterprise in the near term, although he conceded price drops were inevitable in the next few years.

Powersoft's efforts on the low end may provide both time and revenue to focus on the high-end requirements of corporate users moving beyond client/server decision-support applications, said Judith Hurwitz, president of Hurwitz Consulting, Inc. in Watertown, Mass.

Powersoft must do this, she added, because its inability to scale up and distribute code across both clients and servers is beginning to hurt the vendor with corporate customers.



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(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
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Digital

CONTINUED FROM PAGE 1

Analysts and customers said Digital must do the following to turn itself around:

- Cut costs and realign its business model to cope with the shift to low-margin sales.
- Articulate a clear corporate vision and demonstrate open systems leadership.
- Grow services business more briskly to offset VAX maintenance declines.
- Start selling Alpha products in volume.

"My most pressing worry about Digital is to understand from them how they think they're going to add value to customers in the future, how they're going to make money," said Raymond Sasso, chief information officer at J. R. Simplot Co. in Boise, Idaho.

"Clearly our customers do not understand our messages and programs," said William Strecker, chief technology officer at Digital. "In some cases, our sales force doesn't know as well."

Strecker promised a "radical simplification" of Digital's marketing message by July.

Digital Chief Executive Officer Robert Palmer turned down repeated requests from *Computerworld* to be interviewed for this story.

While industry and financial analysts said Digital's problems are worse than anyone thought, most are convinced that this is not the Digital death spiral.

Solid products, good cash flow and Digital's large installed base make it too strong to share the fate of wounded New England minicomputer brethren Wang Laboratories, Inc. and Data General Corp., analysts said.

That's not to say Digital is out of the woods. As its stock plummeted to about $19 a share last week, rumors swirled about the possibility that Digital could either be bought outright by another company or perhaps divided into smaller pieces to be sold off.

Analysts also speculated that the embattled Palmer has one more quarter in which to show he can resolve Digital's woes. "A disastrous fourth quarter will mean a change in management by the end of the calendar year," said Chris Christiansen, an analyst at International Data Corp. in Framingham, Mass.

Good news, bad news

Ironically, Digital has caught up with and even surpassed other vendors in its open systems product offerings, analysts said. But the company's perennial inability to market these products is getting in the way.

"A year ago, the question was whether they could get Alpha in position to market," said John Claxton, system administrator at Insteel Industries, Inc. in Mount Airy, N.C. "Now they have the technology. But the question is, can they market it?"

Indeed, Digital needs fast improvements "for the business world to continue to have faith in them," said Rikki Kirzner, an analyst at Dataquest, Inc. "If they're going to [rebound], they have to start to show results by the end of the year."

Some said the alarm bells are ringing now. "Within the next two weeks, I want to see Palmer ... deliver a clean, articulate description of what the corporate strategy is," said Richard Buchanan, an analyst at Forrester Research, Inc. in Cambridge, Mass.

Part of that strategy might include dropping product lines where Digital cannot be a market leader, as Palmer suggested in a recent discussion of a 1995 restructuring.

Which products and services the company may discard remains a mystery. "I don't see significant changes in the scale and scope of our product line," Strecker insisted.

In the meantime, customers are clamoring for leadership in their move to new-er environments — be they Microsoft Corp.'s Windows NT or Unix.

"Maybe we're not listening, but they haven't articulated a strategy for dealing with people like us," said Bill Stella, senior vice president of information services at Arkwright Insurance Co. in Waltham, Mass.

In a recent survey of 138 VAX and Alpha customers, roughly 65% of respondents said they would consider Digital to expand or implement Unix or NT in their organizations. However, of the 38% of respondents who had already adopted Unix or NT and had considered Digital, nearly half had opted for another vendor.

"This year is the critical time for [customers] making decisions about who they want to work with," said Bob Sakakeeny, an analyst at Aberdeen Group in Boston. "If Digital isn't on the short list now, it'll be in [even] worse shape a year from now." Analysts said many major buyers do not know about Digital's open systems offerings.

One particularly worrisome part of the $183 million third-quarter loss, analysts said, is the 11% decline in service revenue from the previous quarter. Service has been a core competency, a profit center and a major strategic area for Digital.

The company attributed the decline to lower VAX maintenance revenue and said it expects to grow the other portion of its services business — the Digital consulting unit — 20% to 30%. However, that unit has yet to overcome the decline, even though analysts see it as a fast-growing area.

"They haven't been able to price [projects] in terms of making a profit," Buchanan said.

Digital has not hit its stride in smaller integration projects that are more plentiful. "Digital should concentrate on ... workgroup environments that may be multivendor but not humongous," said Lynn Berg, an analyst at Gartner Group, Inc., a consultancy in Stamford, Conn.

Awaiting a surge

Another pressing concern is that VAX revenue is dropping more quickly than expected and could tumble 25% to 30% in fiscal 1994, according to Shan Wang, a financial analyst at Smith Barney Shearson, Inc. in New York.

Alpha server sales at $275 million, or 15% of Digital's total product revenue in the third quarter, have also disappointed observers, said William Milton, an analyst at Brown Brothers Harriman in New York. Milton said he would like to see that revenue double at least.

"If Alpha systems do not account for at least 25% of overall sales by the end of the calendar year, I'd say they have no growth strategy at all," Berg said. Analysts predict a surge in VAX-to-Alpha migrations before year's end.

Digital's Strecker said the third quarter showed signs of an upturn in VAX-to-Alpha migration. The key, he added, was Digital's recent announcement of functional parity between OpenVMS on Alpha and VAX and a Unix version that analysts agree is competitive. "We're seeing the beginning of the Alpha takeoff. Everything is in place," Strecker said.

But with lower margins on Alpha sales, a shift to indirect channels is also key, analysts emphasized. Digital said it sells 15% to 25% of its products indirectly but is working to increase that.

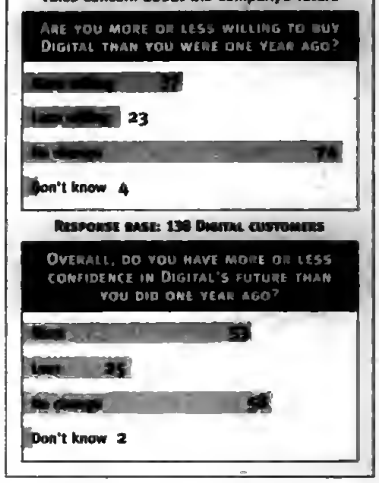
Among Palmer's greatest challenges, customers said, is improving morale. "There's kind of a lingering air of fear and anger anytime you talk to a Digital employee," said Robert Cloninger, data processing manager at OK Industries, Inc. in Fort Smith, Ark. "I think that somebody is going to have to settle the troops down."

Bright spots

- Revenue in the PC business unit is up 140% over last year, according to Digital.
- Storage business unit revenue is estimated at $1.1 billion, according to IDC.
- Manufacturing costs have been cut by 5%, according to Gartner Group, partly due to new systems design.
- The company has more than 200 design contracts to manufacture Alpha chips for embedded systems, according to Gartner Group.

Still going . . .

Digital customers are still buying, but some voice concern about the company's future



Source: *Computerworld* Database Division, Framingham, Mass.

Frank Brake: *Digital has to boost customer confidence*

Priority one: Slash costs

Digital's mammoth third-quarter loss included a piece of bad news that particularly dismayed industry observers: Spending went in the wrong direction and increased during the second quarter.

Cost-cutting has to be priority No. 1 for Digital, analysts agreed.

"The issue is, why are cuts still not being made, and why is the cost of sales increasing?" asked Lynn Berg, an analyst at Gartner Group.

Digital's answer: aggressive advertising in the third quarter and the expense of selling direct drove costs up.

The company said it is likely to announce a new bout of layoffs before the fiscal year is over — and those cuts will be beyond the previously promised layoffs that will bring the company to 85,000 employees before the fiscal year ends. At its peak in 1989, Digital had 129,000 employees.

To PacifiCare Health Systems, Inc. in Cypress, Calif., the third-quarter loss was a blessing in disguise. "They need to be shook up," said Matt Holdrege, a senior network specialist at the firm. "If they had a profitable quarter, they might have gone back to business as usual."

Analysts recommended that Digital do the following:

▶ **Reduce its work force.** Analysts said the company has to shrink another 10,000 to 20,000 beyond the 7,000 in cuts to be made by the end of the fiscal year.

▶ **Cut back on its large sales force.** Digital Chief Financial Officer William Steul acknowledged that the company has a "much larger sales force than anyone I know."

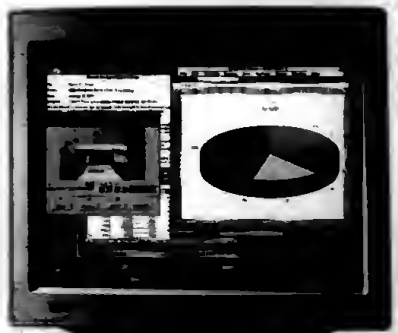
▶ **Learn to forecast.** After two quarters of surprise at its own wobbly financials, Digital is apparently unable to accurately forecast, and analysts are growing impatient.

— Mary Brandel and Craig Stedman

company
from behind
a desk."

as on the

desk.



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Briefs

DG reports loss, cuts

Data General Corp. last week said it will cut 400 to 600 more employees by year's end, reducing the work force to between 5,500 and 5,700. DG posted a loss of $48 million for its second-quarter financials — six times greater than the year before. Revenue for its proprietary MV line plummeted to 14% of total product revenue compared with 29% a year ago. Total revenue, however, was up 8% from last year, to $282.9 million. "Our costs are too high for an open systems business model right now," a DG spokesman said.

Intersolv acquisition

Intersolv, Inc. last week announced and closed an acquisition of Q+E Software, a purveyor of desktop query and reporting tools and database middleware products. Intersolv purchased Q+E for approximately $36 million — $6.3 million in cash and 2.3 million shares of Intersolv stock.

Emulex turnaround

Emulex Corp., a provider of connectivity products, announced a third-quarter turnaround, with sales of $16.2 million — up 30% from the same quarter last year. But company officials also noted a third-quarter net loss of $100,000, or 2 cents per share, attributed to its distribution of QLogic Corp. shares in February. In the same quarter last year, the firm had a $1.5 million loss.

SHORT TAKES **Intergraph Corp.** announced a 15% revenue decline, to $240 million for the first quarter ended March 31, compared with $282 million for its first quarter last year. ... **NetFrame Systems, Inc.** stock tumbled 33% last week after the firm reported income of $1.79 million for the quarter ended April 2. The 1% increase over the same period a year ago comes on revenue of $20.5 million, an increase of 51%.

Borland faces uncertain future

The software developer is expected to post a loss, and layoffs are imminent

By William Brandel

As Borland International, Inc. heads into the summer months, questions remain about whether the significantly downsized company can succeed as an independent concern pushing a new upsizing strategy.

Without the Quattro Pro spreadsheet line, Borland will forge ahead as an application development tools and database vendor, according to Philippe Kahn, chief executive officer of the Scotts Valley, Calif., company. Kahn says he believes that by returning to its roots, Borland will emerge from its current problems a stronger, more viable market contender.

"We are obviously at the fork in the road, like when we brought object computing to the industry," Kahn said. "That decision was very drastic and very successful for us. What we are doing now is very similar."

Peer to peer

According to the 1994 SoftLetter 100, Borland did not rank as one of the Top 10 productivity leaders. The company did make the Top 10 in two categories, however.

5th place — SALES PER EMPLOYEE: $226,041

10th place — INTERNATIONAL SALES $459M revenue

Speculation abounds

In the aftermath of the intended merger of Novell, Inc. and WordPerfect Corp. and based on Borland's present straits, Wall Street analysts are openly speculating that Borland could be a takeover target for Novell or Lotus Development Corp. Borland would reportedly fetch $600 million to $800 million, analysts said.

"If I was Lotus, I'd buy them now," said Mike Kwatinetz, an analyst at PaineWebber, Inc., a Wall Street investment firm. "They could use Borland's products and are the only ones who would not be hampered by the effects of the Borland/Lotus lawsuit."

Indeed, analysts noted that by cutting its employee roster, selling off its spreadsheet line and preparing to launch five or six new products in the next six months, Borland is behaving like a company that wants to be acquired. However, Kahn said these are the actions of a company determined to be a market player.

"Why would we want to sell the company now?" Kahn asked. "We have a new management team and plenty of cash in the bank. I am 100% committed to my job, executing our plan and making the company successful."

Which way the company heads will depend a great deal on its ability to deliver products that generate revenue. Most important is delivery of a rock-solid version of the long-awaited dBase for Windows, which is needed to hold Borland's customer base of almost 5 million users.

"This thing has been missing in action since November 1992," said Donald A. DePalma, an analyst at Forrester Research, Inc. in Cambridge, Mass. "This has to be a knock-your-socks-off product to stem the migration" to Microsoft Corp.'s Access and FoxPro.

According to beta users of dBase for Windows, the product is solid and lives up to its billing. In addition to Windows support, it includes Integrated Database Application Programming Interface and excellent integration with enterprise-size databases such as Oracle Corp.'s Oracle and IBM's DB2, the users said.

While dBase for Windows is strategic from an installed base perspective, it is also important to Borland's immediate financial performance, according to Wall Street analysts. Borland received $145 million when it sold its Quattro Pro spreadsheet business without dBase for Windows 5 to Novell, but the company will face a loss of 74 cents per share for the quarter ended March 31, according to Wall Street projections.

Kahn would not say whether the product would make the fourth-quarter deadline, but he did say it would ship sometime this summer. That could be a difficult time for Borland because prior to that, 200 more employees, or nearly 10% of its work force, are expected to be laid off. This reduction is in addition to the 100 Quattro Pro employees that are expected to leave the company. Borland announced last week it would also lay off 100 employees in Europe.

Legal woes

Furthermore, the company awaits news of the damages to be awarded in the patent infringement lawsuit it lost to Lotus, which is seeking $100 million in the suit.

Customers, meanwhile, expressed concern over a possible Borland merger. One user said it would be difficult to remain a loyal Borland user if the company is bought by Novell or Lotus.

"Novell knows NetWare and Lotus knows Notes," a New Jersey-based integrator said. "If either bought Borland, it would push back product delivery time. And if they did that, this whole client/server development ball game shifts over to Microsoft."

Desktop leaders post healthy earnings

By Computerworld staff

If last week's earnings reports from several desktop heavyweights are any indication, technology investors may have reason to smile. Microsoft Corp., Intel Corp., Compaq Computer Corp. and Lotus Development Corp. all announced record or very healthy quarterly earnings.

Despite Microsoft's pessimism last summer that it could maintain its explosive, double-digit growth, its fiscal third-quarter sales jumped 30% over last year, to $1.24 billion. For the first three quarters of fiscal 1994, the company has grossed $3.36 billion, more than half a billion dollars ahead of the same period last year, which totaled $2.7 billion for the months of July through March.

Microsoft's earnings for the quarter would have leaped 38% if not for a $120 million onetime charge to cover damages in the patent infringement suit it lost to Stac Electronics in February. That case is currently under appeal.

Chipper results

Also announcing record earnings was Intel, which said that for its first quarter ended April 2, revenue was $2.66 billion, up from $2.02 billion a year ago. Net income rose to $617 million compared with $548 million in the comparable quarter in 1993.

Company officials cited strong PC demand and slightly higher chip prices for its seventh consecutive quarter of record earnings and revenue.

Lotus said net income for the quarter ended April 2 rose 73%, to $21.3 million vs. $12.3 million in the same period a year ago. Sales for the first quarter were $247 million compared with $227 million in the comparable period last year.

Despite an earnings jump of 74% and results that reportedly met most analysts' expectations, Lotus' stock dived almost 8 points last week, falling to $56.75 and cutting 12% of its value. The stock hit a high of $86.50 last month.

Way up

Compaq's earnings were up 108% over last year's earnings of $102 million in the same period. The company announced income of $213 million on sales of $2.3 billion for the first quarter ended March 31. Sales in the same period a year ago were $1.6 billion.

Analysts said this marks the second straight quarter the company has crossed $2 billion in sales.

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The price of freedom

Last Monday in Concord, Mass., spectators witnessed the dawn re-enactment of the "shot heard round the world" that started the American Revolution 219 years ago.

The dominant motive that defined the actions of that day and the war that followed is the distinctly American ideal of individual rights.

At the heart of our prolific body of laws protecting individual rights is the simple notion that you can pretty much do what you want as long as it doesn't trample the rights of others. So you can play music very loud as long as your neighbor isn't trying to sleep. Or buy some headphones and literally drive yourself deaf, because in the U.S. you even have the right to be an idiot.

Today we have a group of people defending the alleged actions of an MIT student on the basis of his precious right of free speech. Specifically, a 20-year-old man who a federal grand jury has indicted on charges of setting up a bulletin board on the Internet and then inviting folks from around the world to log on and steal copyrighted software from a server.

The lad's attorney has excoriated the Feds, saying his client never profited from the alleged actions and has casted the matter as yet another great civil liberties battle. For enough money and publicity, many defense lawyers would fight to clear Stalin's name, so let's skip past the attorney's tirade.

The indictment says the student conspired to aid others in committing a felony. That's what software piracy is — a felony that deprives companies and individuals of their right to earn a living. And if you willingly assist others in doing this, then you also have committed a crime. Simple?

Unfortunately not. The fact is that it is increasingly difficult for laws to keep pace with information technology and the commission of crimes aided by it.

For example, it is possible for employers to access various electronic databases to create profiles of potential hires. That's legal. The hiring manager has a fiduciary responsibility to the company and its owners to control costs. So why not screen out candidates who might, say, present a greater risk as medical insurance liabilities, like older people and women of childbearing age? That's illegal, but who's going to catch you? Probably no one, unless we have increased restrictions to certain kinds of data.

"Foul!" cry the freedom-of-information zealots. "We shouldn't restrict the transmission of information through the ether. It's the final frontier of true freedom."

These patriots who dwell on the lunatic fringe of cyberspace have a queer sense of righteousness. They want to enjoy loud music, and don't you dare tell them they can't do so at the expense of the peace and quiet of others. Any system — be it political, social or even information-based — needs rules lest it decay into anarchy. Cyberspace is not a place for anarchy.

Bill Laberis

Bill Laberis, *Editor in Chief*

More than meets the eye

Charles Babcock made a number of errors in "Microkernels are in your future" [CW, March 21].

First, there are a number of mature microkernel operating systems on the market, such as QNX and OS/9, although they typically target the real-time market. These systems each have more than 10 to 12 years of field use. I wouldn't call that "experimental." Second, they are not large. The QNX microkernel is about 30K bytes.

Finally, even though most system services are accessed via message-passing, this does not mean performance suffers.

Message-passing is inherently synchronous, and service-class memory is entirely under the control of the service process (such as the file system administrator), so there is no need to use semaphores to control access to these structures.

In fact, performance metrics of microkernel operating systems vs. monolithic kernels running on the same hardware indicate that the microkernel systems are significantly faster. QNX on a 486/33 PC can handle approximately 12,000 kernel messages per second vs. 10,000 for the same calls on a DEC Alpha AXP at 150 MHz.

It would behoove you to verify your assumptions before you print them.

William Boyle
Lincoln, Mass.

Just the facts

Two recent items in *Computerworld* showed peculiar interpretations of facts.

"Downsizing NASA plans data megacenter" [CW, April 11] noted that, "Faced with mounting pressure to cut costs, NASA is breaking a tradition of decentralized computing by consolidating a number of its major data processing centers." The story then noted that NASA has told managers they will be allowed to use savings to "enhance their individual space programs."

Won't that simply channel savings into local program efforts, without centralized management and economies of scale? How will that reduce overall NASA costs?

In "IBM price breaks won't set new trend" in the same issue, a chart comparing the costs of dealing with several software vendors ranked IBM third, noting, "IBM is seen as more expensive than most other mainframe software vendors, but not by much."

While this is true, it seems to gratuitously chastise IBM for high prices. The headline could easily have read, "Computer Associates and Dun & Bradstreet head list of expensive software." You seem to have labored to produce a more extreme headline than was justified by the facts.

Gabriel Goldberg
Chantilly, Va.

ODBC: Less is more

Richard Finkelstein's "ODBC spells headache," [CW, March 21] does not emphasize the key point of any layered software approach. With burgeoning SQL dialects tailor-made for individual database engines, Open Database Connectivity (ODBC) attempts to hide many unnecessary details from the client.

Mr. Finkelstein is right in stating that there are performance and functional penalties in using ODBC; this is true for any layered software. But would he write Ethernet frame-handling in his highest-level applications, despite the performance and functionality possibilities?

For most applications the benefits of insulation from the target database specifics is far greater than the performance/functionality degradations. Once ODBC is accepted as a standard, competitive pressures will ensure that database vendors will provide highly optimized ODBC drivers.

As for allowing pass-through capabilities to the native relational database management system as evidence of its weakness, would Mr. Finkelstein fault a higher language just because many compilers allow pass-through to assembler-like statements based on the underlying processor? I hope that by standardizing client interfaces through ODBC Microsoft will indirectly slow the proliferation of SQL dialects.

Naveen Narula
Plymouth, Mich.

■ Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: 279-6273; Internet: letters@cw.com. Please include a phone number for verification.

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Breaking down the triumvirate

David C. Moschella

One of this industry's great ironies is that the so-called open systems era has been so thoroughly dominated by three de facto monopolies — Microsoft, Intel and Novell.

Given the power of this triumvirate, it's not surprising that so much of the industry is defined in terms of these standards setters. Receiving less attention are the complex and highly unusual relationships among the three companies themselves.

Rarely, if ever, in the history of American business has there been such a pure and sustained example of self-reinforcing monopolies. For more than a decade, what has been good for one almost inevitably turned out to be good for the other two.

We have all seen this virtual cycle at work: Faster processors can handle the more complex software that is needed to run larger networks, which require faster processors, and so on. It has clearly been one of the great money machines of our time.

> **Rarely, if ever,** ***in the history of American business has there been such a pure and sustained example of self-reinforcing monopolies.***

Unfortunately for the triumvirate, but perhaps fortunately for other industry participants, there are strong indications that the virtual cycle is beginning to unravel. Although some of the changes will take a few years to emerge, the relationship among the Big 3 will become at best indifferent and at worst openly hostile.

That Microsoft and Novell are becoming direct competitors is no secret. Microsoft's efforts to define the server architecture constitute a direct challenge to Novell's LAN software franchise. If Microsoft's Windows NT server strategy succeeds, it will surely be a sad day in Provo.

Perhaps less obvious are the diverging interests of Microsoft and Intel.

Consider two simple questions. First: What is the best thing that could happen to Microsoft? If Bill Gates could be granted three business wishes, one would almost certainly be that NT or its follow-ons establish a truly portable operating system standard that a wide range of hardware platforms could support.

However, such a development would almost certainly be very bad news for Intel, which would face an onslaught of aggressive new microprocessor competition from IBM's PowerPC, Digital's Alpha and other current and future designs.

Now consider the second question. What is the worst thing that could happen to Microsoft? That's easy. The nightmare scenario in Redmond would have IBM's OS/2 becoming a runaway hit in the marketplace, dislodging Microsoft's dominant operating system position.

However, broad acceptance of OS/2 would be just fine with Intel. After all, OS/2 was designed to run primarily on Intel microprocessors.

It is in this sense that the arrival of products such as Windows NT, OS/2 and PowerPC signal the beginning of the end of the cycle decade. The interests of the triumvirate are no longer in sync; in fact, they are increasingly in opposition. As the triumvirate gives way, an era of more egalitarian, truly open competition should emerge.

Moschella is senior vice president of worldwide research at International Data Corp. in Framingham, Mass.

Who owns your customers?

Patricia Seybold

Who owns the customer databases within your company? Is it the sales organization? Is it the customer service operation? Is it central MIS? Or, are your customers the "property" of your distribution channel? It matters a lot.

In virtually every business, regular, fruitful customer contact is the key to rapid process improvements. How can you improve your products and services if you don't get direct feedback from your end customers? If your customers are the property of a single functional organization within (or worse, outside of) your company, how will you stimulate cross-functional process improvements?

If your customer service operation is the only group that has routine access to your customers, it may pass customer concerns and requests to manufacturing, shipping or your quality czar. But will everyone in the organization be bathed in the same customer-focused sea of information?

Companies that place customer information at the core of their information architecture and make that information available to all employees are the ones that have excelled in their industries. L. L. Bean, Federal Express and MCI are classic examples of this business philosophy. Canada's Royal Bank is one of the largest financial institutions in North America. For at least a decade, Royal Bank has had its customer database at the core of its information systems. Unlike most other financial institutions where customers are organized by product or service, Royal Bank realized early on that organizing its information systems by customer was the way to go.

Other companies have taken a bit longer to recognize the necessity of bathing in customer-related information. In the spring of 1991, IBM's then CIO Larry Ford made a fascinating presentation at an analyst briefing about IBM's attempts to re-engineer its own information systems. First, he said he had been asked to provide better executive information systems for IBM executives. But during the planning meeting, the scope changed to an "employee information system" and one that was focused on delivering "customer-driven quality."

> ***Companies that have placed customer information at the core of their information architecture have excelled in their industries.***

That meant that IBM's customer information systems had to be completely reorganized so everyone in the organization could focus on customer accounts worldwide, and each geographic region could look at customer activity and relationships in the way that made the most sense.

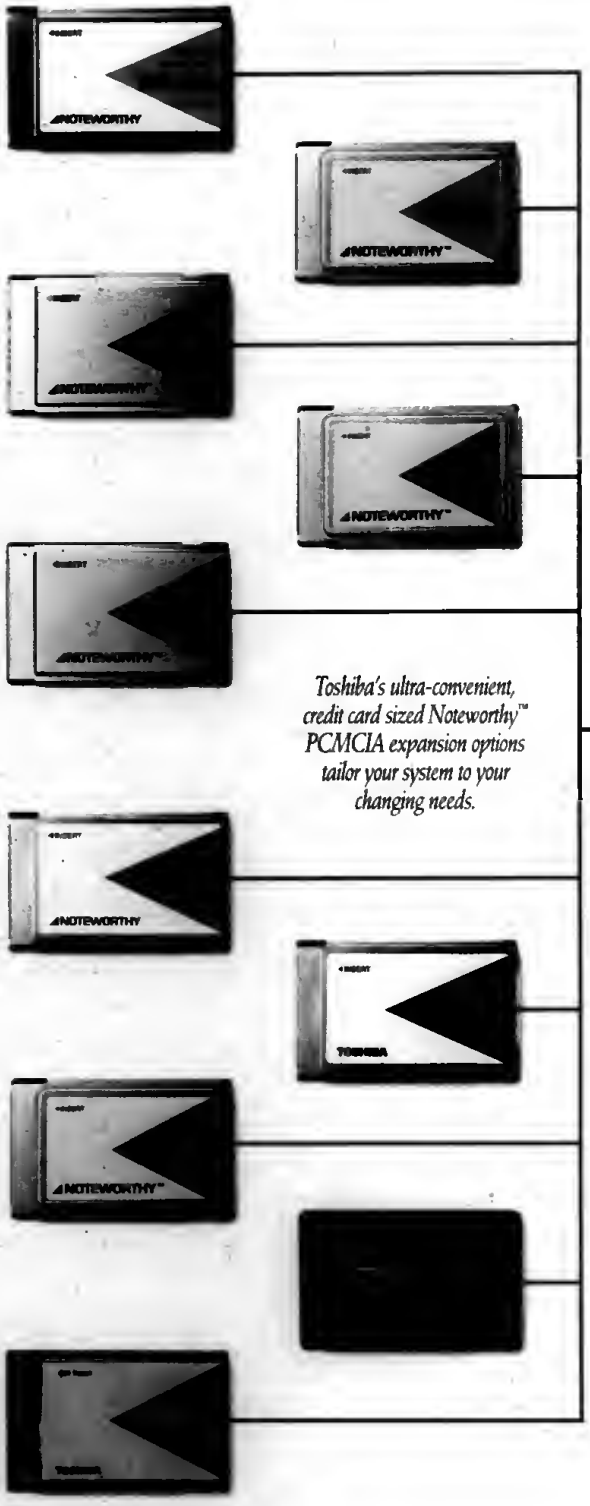
Only IBM can tell us if it has achieved that goal. But it was certainly clear by 1991 that IBM was losing hold of its customers.

What should you be doing about customer information? Today's affordable relational databases and servers allow you to gather rich customer information everywhere your employees encounter customers — from the shipping dock to the service counter, from the salesperson's laptop to the CEO's golf cart.

You'll need a unique identifier for each customer/relationship. You can download customer transaction data from your mainframes onto departmental servers and enrich that data with locally gathered knowledge. You'll be building rich customer profiles that can be consolidated, replicated and redistributed throughout your networked organization.

Don't forget to link in the "warm fuzzy stuff." This is where a product like Notes comes in. Link your relational databases to your discussion databases about customer issues and product/service improvements. If customer data is at the core of your networked information strategy, you'll never be sorry.

Seybold is president of Patricia Seybold Group in Boston. Her Notes address is Patricia Seybold@PSOCG. Her Internet address is PSeybold@PSGroup.com.



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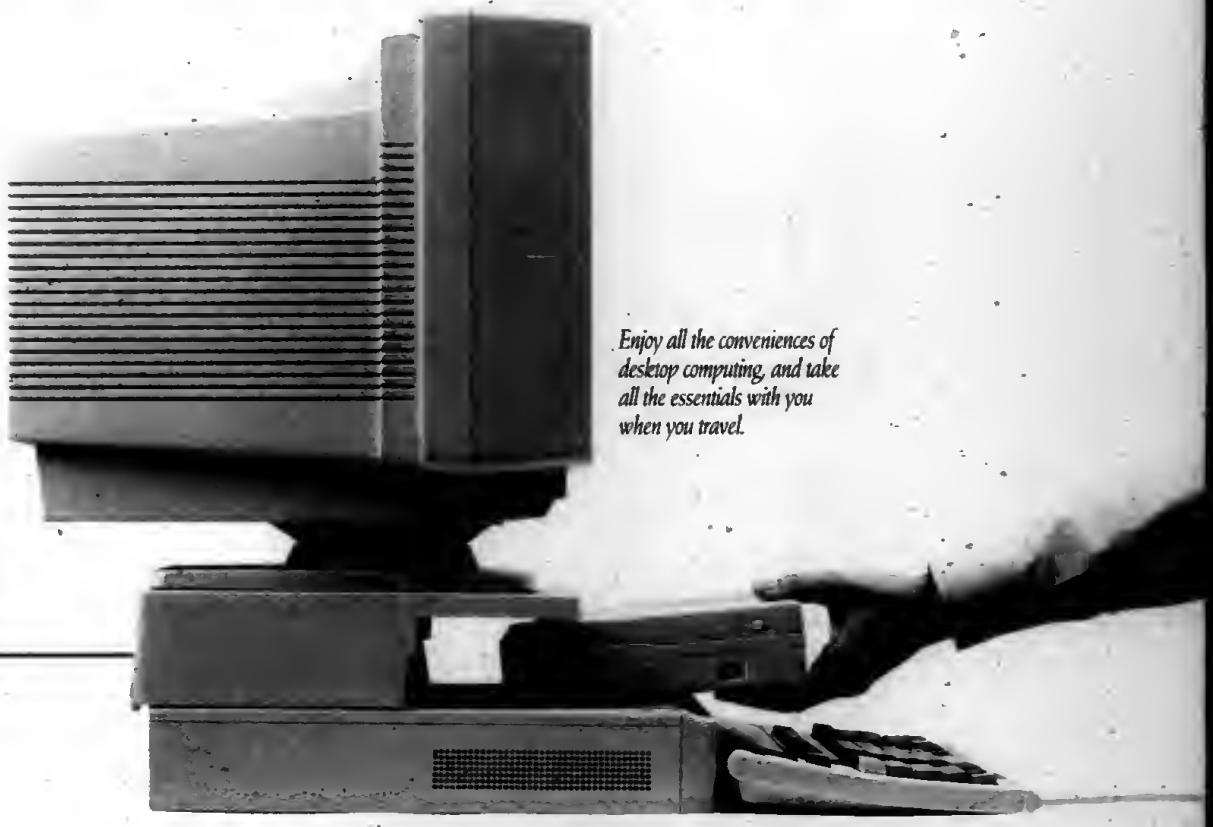

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intel inside

NEC

NFL adds Windows NT to roster

System ensures teams stick to salary cap

By Stuart J. Johnston
NEW YORK

When someone mentions the National Football League this time of year, many people think of the spring draft and their favorite college players, young hopefuls pining for a shot at the big time.

For this year's draft, which started yesterday, the NFL had another young prospect working behind the scenes and hoping for its chance to make it big — Microsoft Corp.'s Windows NT.

The reason? Last summer, the NFL's Management Council drafted Windows NT Advanced Server as the platform for its new Player Compensation Management System (PCMS).

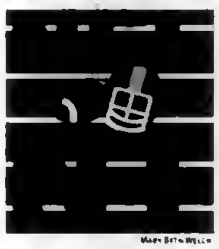
In the contract

The Management Council is the collective bargaining entity for the team owners, and part of its charter requires it to track compliance of each team's player contracts to ensure that no team exceeds a leaguewide compensation cap. In plain language, that means the council must make sure each team spends no more than $34.6 million next season on player compensation.

Making certain that every team complies puts all the teams on an even playing field when it comes to competing for the best players.

Though the business side is not as sexy and exciting as teams slamming one another for millions of TV viewers, like the old saying goes, "That's show business . . . no business, no show."

Sifting through complex contract language and league rules that govern the salary cap is one of the primary functions of the PCMS. And, of course, the NFL wanted the system finished quickly.



The NFL's information processing group, headed by director Mary Oliveti, chose NT over OS/2 and Unix — this from an organization that only joined the PC revolution in the past couple of years. It also chose NT over Digital Equipment Corp.'s VMS, which runs on the NFL's cluster of two VAX 4000-300s.

The NFL wanted to be able to run both the client and server on a single platform and, to the extent possible, "we wanted to use the latest technology available," said Joe Manto, manager of systems software and networking. One major reason for this was that the system must last until the current collective bargaining agreement with the players expires in March 2000.

"We didn't want to get involved in running expensive workstations. Unix has been around for a long time, [and] we wanted to use a new operating system," Manto said.

OS/2 was also excluded because of its inability to run Microsoft's version of SQL Server.

The Management Council chose The Windows Support Group, an established New York-based consultancy, which built the PCMS using SQL Server.

Deadline day

Once NT was selected early last summer and finally shipped in August, the race was on to get the PCMS on-line by Feb. 18 — the date when players whose contracts have expired become free agents.

"Basically, we crammed two years' worth of work into six months," Manto said.

Bill Cornfield, president of The Windows Support Group, called the effort by his developers and the NFL's staff "Herculean."

Hidden uses

Information in the database — which can be examined and analyzed in many different ways — includes, for instance, every compensation transaction that has taken place in a player's career, how many players a particular sports agent handles and how many games a player was active in last season.

Even the NFL's public relations department has found uses for the system, such as being able to tell reporters instantly how many players in the league played ball at a particular college.

"Before [PCMS] it would take an intern three or four hours, and this system does it in about four seconds," said Peter Ruocco, vice president of compliance and operations.

While each team has its own server (all but one are Intel Corp.-based; the other is a Digital Alpha machine), all 35 of the PCMS' servers are located at the NFL's Park Avenue headquarters.

The teams all have dial-up access to the information in the database using Microsoft's Windows for Workgroups 3.11 and NT's Re-

NFL, *page 41*

On Site

The National Football League
New York

Challenge: To comply with the terms of the players' collective bargaining agreement and track compliance of compensation caps.

Technology: Thirty-five Windows NT Advanced Servers running on single-processor Intel machines using Microsoft's SQL Server. The servers run NT's built-in LAN Manager networking; teams use Windows for Workgroups 3.11 running NT's Remote Access Services to query the database.

Results: The Windows Support Group and the NFL's IS staff put PCMS on-line in six months.

Market strategies

Compaq revamps high-end offering with lower prices

By Jaikumar Vijayan

In a major revamp of its product line, Compaq Computer Corp. has replaced its high-end DeskPro/M desktop range with the new DeskPro XL series and refurbished its midrange and low-end PCs.

Prices on Compaq's DeskPro XL desktop series, announced last week, are 15% to 20% lower than comparable DeskPro/M systems.

The low price tags have already caught users' attention.

"We welcome the reduction as long as we don't lose functionality," said Sue Stanley, manager of technical services at Boulder County Information Services in Boulder, Colo.

Analysts said Compaq's new product and pricing strategy is an attempt to aggressively pursue market leadership in the high-end PC market.

"Compaq can do it. It is making the most of opportunities caused by IBM delays in the high end, and right now it is willing to buy market share" with competitive pricing, said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.

Compaq's announcement came on the heels of similar high-end product announcements by Dell Computer Corp. last week. Dell introduced a range of PCs based on Intel Corp.'s DX4 and Pentium processors. That move is expected to intensify the price competition in the high-end PC market.

Compaq's latest

Standard features on Compaq's new high-end PCs include:

Intel i486DX2/50 to 66-MHz Pentium
PCI* local bus, EISA
8M bytes to 144M bytes
5 expansion: 3 EISA, 1 EISA/PCI, 1 PCI slot
QVision 1280/P or QVision 2000

*Peripheral Component Interconnect

Compaq's network-ready DeskPro XL line, which starts at $2,599, features 486- and Pentium-based configurations on the Peripheral Component Interconnect (PCI) local bus. The PCs include an integrated Ethernet network interface controller and a SCSI controller for PCI on a single Advanced Micro Devices, Inc. chip.

The DeskPro XL series also features Enhanced Business Audio, which adds SoundBlaster compatibility, and an updated version of Compaq's QVision graphics architecture. Innovations include an integrated keyboard with a built-in microphone/speaker, a mouse connector and a cooling fan developed using aerospace technology.

Early look

Analysts who viewed the machine before it was released said they liked what they saw.

"This is a category-defining product from Compaq," Zwetchkenbaum said. The machine's scalability and flexibility makes it one of the best price performers in its range, he said.

By offering modularity all the way up to Intel's next-generation P6 processors, Compaq is making sure its XL platform remains current for the next few years, said Joyce Gavenda, an analyst at Summit Strategies, Inc. in Boston.

Meanwhile, Compaq last week also introduced a 100-MHz Intel DX4-based version of its midrange DeskPro/XE PCs and announced five additions to its entry-level ProLiant family.

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PROGRESS SOFTWARE

Microsoft tries to quash European software piracy

Raids have resulted in two arrests

By Cara A. Cunningham
PARIS

■ Saying it is tired of losing money to European software counterfeiters, Microsoft Corp. recently kicked off a multinational campaign to fight the growing crime of software piracy.

Officials at Microsoft, the world's largest software developer, also pledged to use funds gained from lawsuits to retrain computer professionals.

Microsoft European President Bernard Vergnes said the company is committed to cracking down on the counterfeiting operations that have spread from Asia into Europe's established software markets.

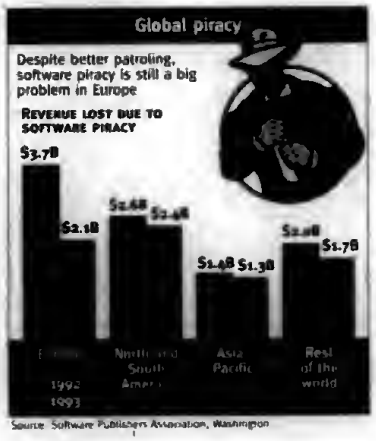
"There is $5 billion in Europe not being made by the software industry because of counterfeiting," Vergnes said. Piracy, which is the illegal copying of software applications onto disks or computers, makes up about 75% of software copyright violations, according to the Software Business Association in Washington.

But in Europe during the past year, a number of new organizations have begun to sell high-quality imitations of Microsoft's DOS and Windows programs with the Microsoft label but without a license, Vergnes said.

Lured to lucrative market

"More and more people are getting into [software counterfeiting] because they realize that it's a lucrative business," said Software Business Association President Robert Holleyman. Although the majority of counterfeiting still takes place in Asia, it is becoming a bigger threat to software publishers doing business in Europe, he said.

Microsoft hopes to curb the counterfeiting trend by heightening awareness of local and international enforcement authorities; lobbying governments to classify software violations as copyright infringement; educating users about counterfeit software and the benefits of buying original programs; and taking legal action against known violators, Vergnes said.



Source: Software Publishers Association, Washington

Posse organized

Interpol, the international police organization, has formed a unit charged with taking increasing action against intellectual property violations, including software piracy and counterfeiting. The committee, which comprises police officers and private organizations such as Microsoft and the Software Business Association, will work together to investigate counterfeit operations throughout Europe, Interpol officials said.

Microsoft is initially focusing its efforts in France, Germany, Switzerland and the UK, where the company and police organizations have already raided 38 counterfeiting houses. The raids have resulted in two arrests, a dozen complaints and the same number of ongoing criminal investigations, said Brad Smith, the company's senior corporate attorney in Europe. At least 200,000 disks containing illegal copies of DOS and Windows have turned up in the raids thus far, he said.

After receiving a $200,000 settlement from an accused German counterfeiter who was selling MS-DOS under the name "Microsoft OEM," Microsoft donated half to the Software Business Association's anticounterfeiting activities in Europe, Vergnes said.

The company has used the remaining $100,000 to begin the Microsoft Scholar Program, chartered with teaching unemployed information technology professionals about using Microsoft software.

As a result of the European downsizing trend, many veterans of the minicomputer and mainframe era are now looking for jobs in a market that requires PC-based skills, Vergnes said.

The Microsoft Scholar Program will place these unemployed professionals in partnering training centers throughout Europe to give them the skills to reenter the work force, he said.

Cunningham is a correspondent for the IDG News Service.

NFL adds NT

CONTINUED FROM PAGE 39

mote Access Services, which makes them appear as local clients on the NT-based network, Manto said.

However, while the teams can peruse the data as much as they want, data entry and updates are handled directly at NFL headquarters based on daily inputs from each team.

That may change after Microsoft ships a new release of SQL Server that provides replication services later this year.

With that in place, it would be possible to move the teams' servers out to the club sites and have them enter compensation data locally, subject to the NFL's approval for incorporation into the database.

Tweaks on the way

While the NFL's information systems staff and The Windows Support Group did make their deadline for the base system, there are future plans to enhance it that may entail another two or more years' work, Cornfield said.

For example, one planned enhancement will provide player statistics on a game-by-game basis.

Through it all, Manto has only one real complaint about NT Advanced Server. In order to recover the operating system in the event of a major systems crash, "you have to rebuild the entire system," Manto said.

If that is the only complaint, NT and PCMS will likely have a longer career than most professional football players.

Complex compensation

Building the PCMS was challenging to the NFL because there are so many permutations to players' contracts and the league's compensation rules are complex.

For example, "during the off-season, you only count the [compensation for the] Top 51 players you have [offers] out to," said Peter Ruocco, vice president of compliance and operations.

Compensation for any players beyond the Top 51 on a team is factored in using different rules and formulas.

Additionally, there are complex definitions of various types of compensation, such as signing bonuses, performance incentives and how much each player will be paid for each game for which he is posted on the active list, as well as pension and severance packages. There are also the challenges posed by multiyear contracts and special single-year contracts. And when the contracts expire, players jump into the wild and wacky big-money world of free agency.

Altogether, the PCMS must show an accurate picture of how the league's almost $1 billion annual budget for player compensation is allocated on a day-to-day basis. This is further complicated by the fact that the professional careers of many football players are extremely short (less than four years), so the faces, and the numbers, change frequently.

PCMS was designed to deal with all of these contract details and exceptions, and more, including providing remote access to the individual team managers and coaches so they can see how they are allocating funds in relation to the cap.

—Stuart J. Johnston

NFL heavyweights opt for light computers

The bulked-up environment of the NFL would seem like the last place on earth where users would care how much their portable computers weigh. But in fact, the desire for lighter products led the NFL IS department to start buying subnotebooks.

The NFL's notebook users are largely its legal personnel and the people who work on NFL Properties.

When Zenith Data Systems came out with its Z-Lite subnotebook, the NFL decided to buy these 3.9-lb. systems to ease the load on its users, who were toting around systems weighing 7 lbs. or more.

"A number of our users were complaining about the size and especially the weight of the laptops, so anything that cut down on the weight we were interested in," said David Port, the NFL's computer operations manager.

According to Port, one of the NFL's main concerns with the Z-Lite is its keyboard, which is smaller than a normal notebook keyboard. But he said users adjusted to the keyboard after they used it for 20 minutes or so.

Port said he also liked that the Z-Lite has PCMCIA slots because of their flexibility in terms of add-in cards.

Also, the cards limit what users have to carry around, important to Port because "users hate carrying anything they don't have to."

Including extra pounds.

—Michael Fitzgerald

OS/2 software sends text messages to pagers

By Michael Fitzgerald

ChipChat-Cawthon Software recently released its Wireless Communicator for OS/2 Workplace Shell. ChipChat-Cawthon, a Dearborn, Mich., company best known for its ChipChat communications software for OS/2, said the new product will let users send text messages to alphanumeric pagers. The software appears to be the first in its category designed specifically for OS/2's multithreaded environment.

Reduces errors

The product will help OS/2 users avoid fees and dictation errors from conventional text pager service bureaus, said Marty Cawthon, ChipChat-Cawthon president. In those more traditional scenarios, someone typically has to call into a bureau and dictate a message that a worker types and sends to the pager.

Now, "to the end user, it looks like paging capability is part of OS/2," Cawthon said.

The product is now in beta testing, but because it was built using object components, debugging will not be a lengthy process, he said.

The $79 product will be available at the end of the month, Cawthon said.

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[redacted]

Microsoft Corp. has announced the Access Solutions Pack Version 1.0 for Windows.

According to the Redmond, Wash., company, Access Solutions Pack is a companion product to Access database management system Version 2.0. It consists of four ready-to-run business applications to track sales contacts, manage fixed assets, track service requests and manage registration for events.

The pack includes a sales manager that stores, tracks and finds data about sales contacts and business opportunities; an asset tracker that traces an asset or group of assets to a specific location, department or employee; a registration desk that manages registration for conferences, trade shows and other events; and a service desk that manages service requests from receipt to completion.

The Access Solutions Pack costs $64.95.

▶ *Microsoft*
(206) 882-8080

MindWorks Corp. has announced Knowledge Builder, a document storage and retrieval system for the desktop.

According to the Sunnyvale, Calif., company, the product offers Recollect 2.0 document image management software that features full-text retrieval, auto indexing and color and gray-scale image support.

Knowledge Builder also provides a gray-scale scanner with automatic document feeder, a removable magnetic cartridge storage device and SCSI interface kit.

Portable Document Indexing, a technique that creates a separate index for each individual document, is included.

Knowledge Builder costs $2,995.

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Ted Krum

Glory days gone for workstations

Since the economic recovery began in earnest, workstation vendors and their investors have been eagerly awaiting the return of 25% annual growth rates. Unfortunately, they are likely to be disappointed. Many of the forces that made workstations the industry's fastest-growing sector in the late 1980s have since dissipated.

Uniqueness was the greatest advantage workstations had in those heady days. Of course, RISC, networking, Unix and graphical user interfaces were hardly unique to workstations. All had previously been available in other types of systems, in some cases for years. The workstation, however, brought them all together for the first time in a single compelling pack-

Krum, *page 47*

Vendors unite on multiprocessing

Intel's proposed specification could simplify operating system ports

By Jaikumar Vijayan

A slew of major operating systems vendors and manufacturers have voiced their support for Intel Corp.'s recently announced MultiProcessor Specification (MPS 1.1).

This could result in standards-based multiprocessing operating systems as early as June. And desktop systems with two or more Pentium processors and multiprocessing-enabled operating systems and software could be less than two years away.

Industry analysts and users welcomed the move toward multiprocessing hardware and software standardization.

Industrywide spec

"Right now, there are too many standards," said Jeffery Rehm, manager of MIS at Rea Magnet Wire Co. in Fort Wayne, Ind. "What we need to see is a multiprocessing specification that is adopted by the whole industry."

MPS 1.1 constitutes an effort to define broad hardware and software specifications for multiprocessing. The standard now allows OEMs and operating systems vendors to design Intel-based multiprocessor systems to a single generic specification using off-the-shelf components. The systems also can run shrink-wrapped multiprocessing operating systems.

> This means operating systems vendors will no longer have to support platform-specific versions of their software

MPS 1.1 includes a standardized driver interface definition that lets the hardware communicate with multiprocessor versions of operating systems such as Microsoft Corp.'s Windows NT, IBM's OS/2, Novell, Inc.'s NetWare and The Santa Cruz Operation's SCO Unix.

"This is a very minimal spec with a core set of capabilities," said Lew Paceley, an Intel marketing director. "It describes I/O control and BIOS functions for [multiprocessing] systems."

In the short term, this means operating systems vendors will no longer have to support platform-specific versions of their operating system, and users will not have to pay for individual operating system ports as well as integration and support costs.

Unwrap and run

Users can soon expect to see Intel-based multiprocessing servers running symmetrical multiprocessing (SMP)-enabled versions of Windows NT, OS/2 and NetWare right out of the shrink wrap without needing any custom solutions.

Analysts said the move toward implementing standard multiprocessing would eventually push multiprocessing into the desktop arena and open the market to low-cost systems vendors. However, it will be some time before users feel the impact, they added.

"This is a seed strategy by Intel — a

Intel, *page 46*

Maven may be antidote for Texas hospital's ills

By Mitch Betts

Doctors do not like to cram their patient notes into the little fields of a structured database, fearing that some potentially important information will be left out.

"Doctors say, 'Why can't I say it the way I want to?'" said Dr. Dennis Myers, a practicing pulmonologist and a visionary in the field of clinical data repositories.

So the Scott and White Clinic and Hospital in Temple, Texas, has decided to let doctors enter their free-form notes into a huge ASCII database just the way they want to. But the next question is: How can you quickly find or sort anything in such a free-form text database?

Textbook-like indexing

Each record has a header full of labels — patient name, doctor, clinic and the like — and the text is indexed similar to the way a textbook is indexed, explained Myers, who is administrative director of the hospital's research division.

That way, the raw textual data from laboratory reports and patient encounters is captured in a single repository and can be retrieved by searching for any word or combination of words, Myers said. He stressed that no information is lost from the kind of condensing that relational databases require.

That is important, he said, because it is hard to predict today what nuggets of information will be important to researchers or regulators in the future.

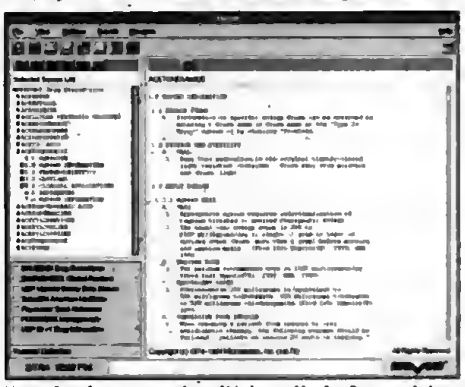
Furthermore, unlike a relational database, ASCII medical records can (if necessary) be read without any database or report-generation software, Myers noted. The central data repository now has 500,000 laboratory reports and 200,000 patient-progress reports, he said.

Text retrieval is handled by Unix-based software, code-named The Text Machine, from Alliance Technologies, Inc. in Austin, Texas. At Scott and White, the beta site for the software, the information travels on a Novell, Inc. NetWare-based Ethernet LAN accessed by 32 concurrent users on PCs and X terminals, Myers said.

Scott and White uses the software not only for handling internal information, but also for managing external databases of medical reference information.

Alliance Technologies began offering Maven, a version of the software geared to reference databases, as a commercial product in March. A version for managing free-form patient records will be released in six to 12 months, a spokesman said.

Maven provides a single graphical user interface for searching medical databases from different publishers, including the *Physicians' Desk Reference* on prescription drugs and databases covering diagnoses and treatments.



Maven lets doctors *search multiple medical reference databases at the same time for nuggets of useful information*

For doctors, that means getting the latest medical information to tackle tough cases without having to learn different query languages for different reference databases, Myers said.

In addition, Alliance Technologies handles the chore of keeping the electronic references up to date by sending new versions on high-density digital audio tape cartridges.

"We off-load [to the vendor] the responsibility for version control of those multiple external databases," Myers explained.

Data-based diagnosis

Already some success stories have been attributed to the on-line references database. For example, in one case, a Scott and White physician using Maven found a link between a patient's anemia and the use of antacids.

"The physician discovered that in very rare cases antacids can interfere with the absorption of iron in the stomach. Once the patient stopped taking the antacid, the anemia disappeared," Myers said.

Maven runs under Hewlett-Packard Co.'s HP/UX and Sun Microsystems, Inc. Solaris operating systems, and it is being ported to IBM's AIX as well, the vendor said.

The cost for the full Maven software system with a 32-user license and all the medical reference databases is $87,000 for the first year and $78,000 for annual renewals.

SGI offers icon-based interface

By Jean S. Bozman
MOUNTAIN VIEW, CALIF.

Silicon Graphics, Inc. (SGI) is offering an icon-based common user interface on all its Unix workstations — from its entry-level Indy to its high-end Challenge.

The common Indigo Magic shell is hosted by Irix 5.2, a new operating system release that runs across the entire SGI product line.

Based on Unix System V Release 4.0, Irix 5.2 is a variant of the Irix 5.0 system introduced with the Indy workstation last July. Until now, however, other SGI machines have run a variant of the 3-year-old Irix 4.0.x.

The ability of the new operating system to host Indigo Magic is seen as a plus that will broaden the user base for SGI's technical workstation offerings, analysts said. Irix 5.2 also supports desktop videoconferencing and enhanced system management features.

Successful introduction

The entry-level Indy, priced from $4,995 for a diskless machine to $20,000 for a 32M-byte unit with 1G byte of disk storage, has been selling briskly. It accounted for about 20% of the 37,760 SGI machines sold in 1993 even though it began shipping in September, said Laura Segervall, a workstation analyst at International Data Corp. in Mountain View, Calif.

Users said the idea of a user-friendly interface is appealing, even though most have not yet seen it.

Surgical tool

Dr. John Adler, associate professor of neurosurgery at Stanford University's Medical School, uses a simplified custom interface to view images of patients' brains during surgery. However, most SGI users access an icon-based desktop and rely on a Unix command line to install applications.

Having a common operating system across all SGI platforms will help software developers, said Paul Hemler, a research scientist at Stanford who helped design the Stanford surgery applications for the Indigo and Indigo2 workstations.

"There are some differences between the [SGI] platforms," he said, "but I'm hard-pressed to [name] one 'gotcha' associated with those differences."

Irix 5.2 is included in the new Indy R4600 machines. Upgrades from Irix 4.0.x running on installed machines are priced at $520 for entry-level Indy units, $2,165 for an Indigo Extreme unit and $4,635 for a Challenge XL Rack Server.

Intel

CONTINUED FROM PAGE 45

harbinger of desktop multiprocessing," said Martin Reynolds, service director, Technology Road Map, at Computer Intelligence/InfoCorp in Santa Clara, Calif. In the short term, he said MPS 1.1 would accelerate development of multiprocessing-enabled operating systems and applications on the server side and eventually onto the desktop.

Server applications that would benefit the most would be database, transaction processing and high-end graphics applications.

Users will also have a greater choice of multiprocessing systems because MPS 1.1 is expected to spark a flurry of lower-cost multiprocessing servers from vendors that have stayed away from the market because of engineering and development costs.

"This is an effort by Intel to commoditize multiprocessing," said Lynn Berg, program director at Gartner Group, Inc. in Stamford, Conn. "Since OEMs can build multiprocessing systems with less engineering, there will be more suppliers of [multiprocessing] systems."

At the same time, the full impact of MPS will not be felt for some time because of the relatively low level of the specification, Berg said. Because all it does is define a common interface with which the hardware can communicate with the operating system and BIOS, the specification is of more immediate interest to operating systems vendors rather than systems manufacturers, she said.

Supporting vendors

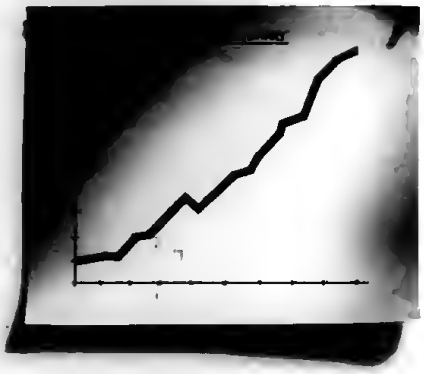
As of last week, 11 major vendors, including IBM, Microsoft, Novell, SCO and SunSoft, Inc., had announced plans to build support for the specification.

On the operating system front, IBM is readying an SMP-compliant OS/2 with support for MPS 1.1 for release by the end of this quarter. SCO plans to release a device driver next quarter that will allow its MPX operating system to run on new MPS-compliant machines with no changes to the hardware or operating system. Novell and Microsoft will also have MPS-compliant multiprocessing operating systems in the second quarter.

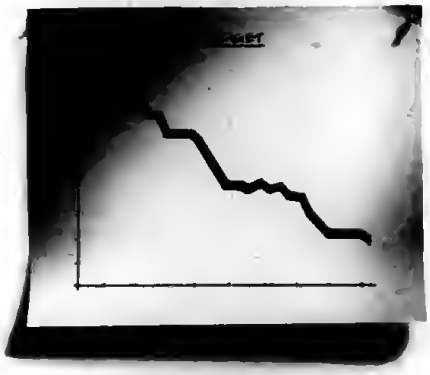
Hewlett-Packard Co. has implemented the specification on its dual Pentium processor-based server, which started shipping this month.

Intel already has a hardware standard for multiprocessing — supported by its 90-MHz and 100-MHz Pentium processors and called the Advanced Processor Interrupt Controller — that defines how multiple processors in a configuration communicate with one another.

Your Boss's Expectations



Your Budget



The executive committee has decided that your company's key to sustainable competitive advantage is a flexible information system — one that can speed up your processes and let you react quickly to change. Unfortunately, they've also decided to cut your budget.

Most likely, this leaves you with a mainframe system that can't fill the bill and an accounting department that won't take kindly to larger monthly bills.

Of course, most members of today's executive committees have read an article or attended a seminar touting the wonders of economical mainframe alternatives and flexible client/server databases. So the answer probably seems simple — to them. But you've got to make it all work in the real world.

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Krum

CONTINUED FROM PAGE 45

age. Customers knew a good thing when they saw it and rewarded Sun and HP/Apollo with first-tier status.

Over the past few years, however, other vendors have recognized the cost, performance and productivity advantages of these core workstation technologies and have migrated them to other classes of systems. Makers of proprietary commercial minicomputers implemented Unix on their own processors or ported their environments to RISC.

> The recent recession revealed that workstation growth is vulnerable

PCs first gained networked data and peripheral sharing, then GUIs and are now moving toward RISC and portable operating systems. Supercomputer vendors have made the transition over the past three years, and even the Hudson Valley mainframe empire of IBM has started, kicking and screaming, down the same path.

Accessing the technology

Soon customers will be able to access these technologies in highly similar forms on nearly all types and sizes of machines. It will take software vendors only another couple of years to close the applications gap, draining the growth that accrued to workstations by virtue of exclusivity.

This said, however, workstations still retain a multiyear advantage in at least one very promising technology: high-performance graphics.

Graphics workstations are critical to enabling communications industries to digitize their production and distribution infrastructure. This is why I'm betting that, unlike other workstation vendors, graphics leader Silicon Graphics will be able to maintain high growth rates.

The second major advantage that workstations had in the late '80s was that technical users, their initial audience, were an easy, wide-open target. Engineers, Unix programmers and scientists loved having their own processors and developed wonderful new applications for them.

Today, however, engineering workstations are common, while new engineering applications are not. The recent recession and defense cutbacks revealed that workstation growth is vulnerable to the economy — something nobody thought about in 1988.

Another key difference is that technical users take an almost masochistic pleasure in receiving poor support and being guinea pigs for new technology. Commercial users, today's growth market, are far more demanding. The circumstances that gave workstations an easy leg up are therefore unlikely to recur.

Finally, workstation makers were blessed by conservative, complacent competitors, sometimes within their own companies. The end of such easy victories is now in sight. The industry's attack dogs have risen to dominant positions and now face mainly each other.

In sum, industry executives now face vicious price and performance competition in an environment of shrinking product differentiation and growing marketing and support costs. I don't envy these people.

Krum is senior research analyst at RCB International in Stamford, Conn. He can be reached by E-mail at Tedkrum@aol.com

Briefs

CompuServe gets NT servers

Microsoft Corp. said **CompuServe, Inc.** will acquire more than 100 Windows NT Advanced Servers to serve as the main operating systems for CompuServe's new Information Services Architecture, which will be implemented later this year.

Lite version of LANalert available

Network Computing, Inc. announced a $99 "lite" version of its LANAlert NetWare-based management platform that will support a single file server per network.

Prices drop on Token Ring cards

Thomas-Conrad Corp. in Austin, Texas, lowered prices on its Token Ring adapter cards by up to 20%.

Ethernet adapter cards unveiled

Alta Research Corp. in Deerfield Beach, Fla., unveiled a family of Ethernet adapter cards for PCs and compatibles starting at $75.

Making the link

Moses Computers in Los Gatos, Calif., will release MosesDock for Windows, a notebook-to-PC link. MosesDock is a combined hardware and software product that will handle file transfer, connect a notebook to networks and allow printer sharing.

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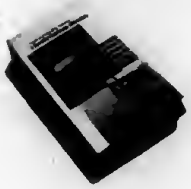

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Spectrum 3.0's usability draws user praise

By Stephen P. Klett Jr.

Cabletron Systems, Inc. in Rochester, N.H., scored a usability home run among early users of Spectrum 3.0, the third release of its enterprise network management platform. However, users said they still want more third-party application support, which has long been a thorn in Spectrum's side.

Major additions to Spectrum 3.0 include distributed management capabilities, a customizable graphical user interface (GUI) and more point-and-click functionality, which users said makes the platform easier to use.

"Usability has really skyrocketed with this release," said Michael Smith, manager of telecommunications at Credit Suisse in New York, a Spectrum 3.0 beta site. "The distributed management and custom interface features really raised it a level. Before, only a geek could understand it, and now the more general user can as well."

A better idea

"It definitely looks like it will give non-technical people a better look and feel for the network and the ability to discover where problems are," agreed Mark Pielocik, network/systems specialist at Bose Corp. in Framingham, Mass. Bose uses Spectrum 2.0 and plans to upgrade to 3.0 when it is available in July, Pielocik said.

While other management platforms such as Hewlett-Packard Co.'s OpenView and SunConnect's SunNet Manager have larger installed bases than Spectrum, analysts said Cabletron has set a usability standard for its larger competitors to follow.

"Spectrum may lag far behind in terms of installed base, but it is very influential in the market from a technological perspective and is forcing its bigger competitors to keep pace," said Jill Huntington-Lee, principal analyst at Brandywine Network Associates in Cinnaminson, N.J.

Spectrum 3.0 is based on distributed databases called SpectroServers. Spectrum uses a form of artificial intelligence that allows management functions to be distributed across multiple SpectroServers, which can be accessed from multiple clients — each with its own view of the network.

This cuts down on network traffic and off-loads the processing burden from a central management server — a vital benefit for large enterprise networks with several thousand nodes to manage, observers said.

Cabletron's Spectrum *allows network administrators to zoom in on individual nodes*

"Distributed networks are growing at a rapid rate, and management platforms need to grow with them," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "The only way they can keep up is by distributing processing among multiple servers."

Distributed management

Users said distributed management is also needed to provide management redundancy.

"Distributed management is important. For example, if you have East and West Coast operations, and a server goes down on the West Coast, you can't afford not to have management on the East Coast," said Danny Allen, manager of network architecture at Electric Power Research Institute in Palo Alto, Calif., another Spectrum 3.0 beta site.

Spectrum 3.0 includes the following new features:

- **Configuration manager**: Permits users to change and monitor the configuration of Simple Network Management Protocol-based devices from any vendor.
- **Enhanced report generator**: Supports six report types, including statistical and relational, and includes a zooming feature that allows users to scale graphs for better readability.
- **On-line backup**: Allows users to back up SpectroServer databases without shutting down the server.
- **Control panel**: Operational commands are now available through a Motif-based GUI that allows users to execute commands by pointing and clicking.

"The on-line backup and GUI capabilities, such as being able to zoom in on particular segments of the network, are tremendous," Allen said.

However, Allen and other users said they want to see more efforts from Cabletron in third-party application support — specifically, more robust remote monitoring (Rmon) support.

Biggest problem

"Cabletron's Rmon support is good, but I'd still like to see more third-party applications because it gives you more flexibility — you're not locked into one vendor," Allen said.

"Third-party support is definitely Spectrum's biggest hurdle to clear to move into the top tier of management platforms," Smith said.

Industry observers agreed.

"Cabletron has met the technical issues and now needs to focus on the business side," said Rick Villars, an analyst at International Data Corp. in Framingham, Mass. "Its distributed support should help attract more third-party interest and OEM support."

Meanwhile, users gave Spectrum 3.0 high praise for being relatively bug-free. Every user reported problems with maintaining consistent colors on-screen, but no one reported serious bugs.

"Whenever you have a beta copy of anything, usually everything needs to be improved," Smith said. "But Spectrum's distributed management has worked from the get-go, which is incredible when you consider how complex it is," he added.

Telco Systems offers ATM-capable transmission system

By Ellis Booker

Broadband networking in the public network has always faced a chicken or egg problem: Carriers are reluctant to install new and expensive broadband switching equipment without proof of customer demand. And customers are reluctant to sign up for services before carrier networks are widely installed.

Last week, transmission systems vendor Telco Systems, Inc. announced two products that it said would help carriers with this paradox.

Telco's fiber optics division in Norwood, Mass., announced Asynchronous Transfer Mode/Synchronous Optical Network (ATM/Sonet) multiplexers for sending T1 or T3 traffic from an end-user location to a carrier central office.

Hyperlynx-50 and Hyperlynx-50 Hub are intelligent transmission systems rather than switches. They are reportedly the first to carry T1- or T3-type services over an ATM link across a Sonet connection.

Toward the future

"We looked at the economics of ATM and ended up with a product platform that allows carriers to provide T1 today while readying ATM," said Bruce Young, general manager of Telco's fiber-optics division.

Because the platform is ATM-based, it can provide native-rate LAN speeds, such as Token Ring at 4M bit/sec. or 16M bit/sec. or Ethernet at 10M bit/sec., in addition to T1 transmissions.

"It's significant," said Curtis Price, research manager of data communications at International Data Corp. in Framingham, Mass. Price said corporate networks are predominantly based on 56K bit/sec. capabilities today, "but we think there's significant demand for 10M bit/sec. services."

Transparent to the user, Hyperlynx and its associated hub convert Time Division Multiplex (TDM)-based services to cell-based ATM and back to TDM circuits.

Telco officials said that because ATM services are monitored on a cell-by-cell basis, carriers have the ability to offer new kinds of usage-based tariffs.

Pricing and availability

Hyperlynx-50, which sits at the customer's site, can support up to eight DS1 circuits for up to 50M bit/sec. of bandwidth. An optional wideband data channel can be added for $2,000. Its list price is $16,000.

The Hyperlynx-50 Hub, which sits at a carrier's central office, supports up to eight remote units and can be configured with a total of 64 DS1 channels and eight ATM-based data ports. It starts at a list price of $22,000; each optional wideband port costs $2,000.

Both systems are scheduled to be available in the fall.

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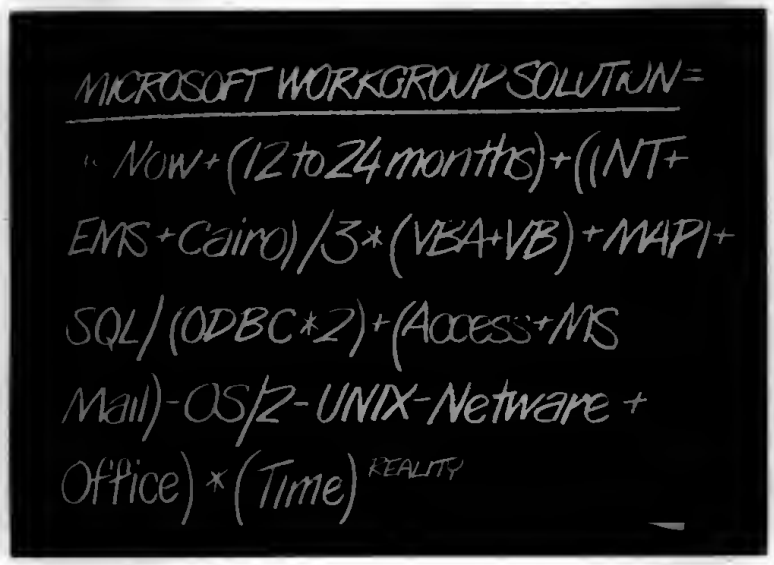

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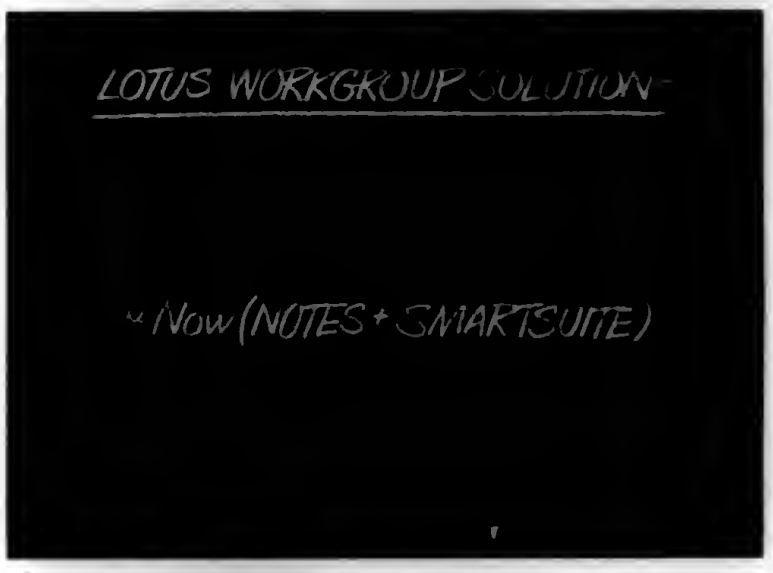

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Microsoft's strategy lacks the range and quality of applications and depth of workgroup features already designed into Notes and SmartSuite.

According to Forrester Research, Inc., an independent high-tech research organization, "Notes enables (customers) to create new types of applications for which other tools are ill-suited." "Microsoft's hybridware foray will fall short for three reasons: (1) **Failure to understand the Fortune 1,000 MIS.** Any Notes wannabe that requires MIS to do heavy lifting will fail. (2) **A Windows-centric view of the world.** Notes' multi-platform support is a central selling point. Forrester does not expect that Microsoft will change its stripes and support non-Microsoft operating systems. (3) **Lotus' lead.**"

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Banyan standardizes

Shifts from proprietary transport, net management

By Elisabeth Horwitt
ATLANTA

• Banyan Systems, Inc. gave its major user group hope that it will move from proprietary to standards-based network management and transport protocols by early next year.

On the transport side, Banyan plans to provide clients with the ability to use native TCP/IP, rather than the proprietary Vines Internet Protocol, to access its Vines and Enterprise Network Services (ENS) platforms.

In addition, Banyan is embedding its Vines and ENS services with intelligent agents that will monitor a given service or system and send key information to a network mangement platform that supports Simple Network Management Protocol (SNMP) 2.

Because almost no major management platform vendors have announced a time frame for supporting SNMP 2, the agents will also interact with SNMP 1 platforms, said Michael Wixon, Banyan's manager of technical services.

User excitement

Users said they were enthused by the news, which company spokesmen released at sessions of the Association of Banyan Users International (ABUI) meeting here.

"SNMP 2 would mean Vines is finally getting a systems management protocol that is not so proprietary and will work with other [SNMP-based] systems," said Steve Wong, a network analyst at Cleary Gottlieb Steen & Hamilton.

SNMP and TCP/IP support means that "Vines is finally coming of age," Wong added. The New York law firm is in the process of implementing a TCP/IP-based network.

Banyan will also announce an Event Management and Logging service that will sit on a management platform and keep a database of events coming in from the intelligent agents, Wixon said.

Backup server

Another key upcoming Banyan service is "StreetTalk Guaranteed Logon," a shadow server that automatically takes over log-on management when the primary server goes down. Banyan installations typically assign each user group a log-on server to verify their identifications and give them access to ENS and Vines resources across the enterprise.

Allowing one server to act as the backup for another would enable users to continue working even when their log-on server crashed or when they were cut off from their server by a wide-area network or router failure, said Ted Kull, president of ABUI and project manager and system engineer at the Educational Testing Service in Princeton, N.J.

Tracking system

The shadow service will also be able to track events, such as the number of failed log-ons occurring on a given server, and changes made to passwords, said Martin Smith, director of information systems at the U.S. International Trade Commission, who attended a briefing on the product. And it will be able to send alarms and information to an SNMP 2-based system, he added.

The service is due to ship with the next major Vines release by year's end; the service for ENS is due out later.

Upcoming announcements

Other major announcements coming up in the near future, according to Banyan spokesmen, include the following:

- **Enterprise backup and restore for Vines and ENS clients, by year's end.**
- **Enterprise Data Distribution Service, providing automated movement of data around the enterprise, in late 1994/early 1995.**
- **A Windows-based graphical user interface (GUI) front end for Banyan's tools for administering the StreetTalk directory and user accounts across a corporatewide installation of Vines or ENS.**

A formal announcement on the GUI front end is expected in the next month or two.

Novell to support more messaging standards

By Elisabeth Horwitt

Novell, Inc. has announced software said to allow its Message Handling System to act as the common messaging transport system for any application written to Microsoft Corp.'s Mail API, the X.400 API Common Messaging Calls or Lotus Development Corp.'s Vendor-Independent Messaging.

Microsoft Windows Dynamic Link Library implementations of the above message application programming interfaces will let mail-aware applications — such as Microsoft's Word or Lotus' Excel — exchange messages using Message Handling System (MHS) as a go-between. A separate gateway is not needed to perform the translation, said Ron Cully, Novell's MHS product line manager.

E MAIL

Perhaps more significantly, the software provides users of the two leading messaging systems — Microsoft's Mail and Lotus' CC:Mail — with a migration path to Novell's messaging system, said David Ferris, president of San Francisco consultancy Ferris Networks, Inc.

This piqued the interest of more than one NetWare shop.

"CC:Mail is not a robust enough backbone architecture. [It's] not something I am looking forward to taking much further," said John Duhiel, manager of planning and technology at Boston Edison Co. "Ideally, we'd like to keep CC:Mail client and get a better mail backbone."

However, Novell needs to deliver key pieces of its overall messaging strategy, such as the integration with NetWare Directory Services promised for the fourth quarter, if it wants to compete with Microsoft's soon-to-be-announced Enterprise Messaging Server. Another competitor is the Lotus Communications Server, although its threat is further in the future, according to analysts and users.

Boston Edison, a major NetWare shop, will still be waiting to see what Novell's rivals have to offer, Duhiel said.

"I would like to see Novell open up NetWare and NetWare Directory Services to products like CC:Mail," said Scott Day, an information systems network consultant at Excel Corp., a Wichita, Kan., meatpacking company.

The first step

Indeed, Novell's recent announcement is only the first piece of a major rollout that Novell has planned for the next 18 months. The effort is expected to culminate in a comprehensive messaging/groupware platform that embodies pieces of MHS, NetWare 4.x and WordPerfect Corp.'s Office [CW, April 4].

Novell will ship Vendor-Independent Messaging (VIM), Common Messaging Calls (CMC) and Simple Messaging Application Programming Interface (MAPI) libraries for Windows clients early next month, Cully said.

Novell's announcement follows a WordPerfect announcement that Office will support MAPI and CMC, which is expected to converge with VIM.

Novell plans to support MAPI 1.0 "since it will exist on every Chicago machine" that ships once Microsoft completes the specification, Cully said. Novell has also promised to provide MHS support for Apple Computer, Inc.'s Open Collaboration Environment, although no time frame has been announced.

Puzzle Systems Corp. has introduced SoftNet NFS, a product that lets Novell, Inc. NetWare 3.11 and above file servers function as a Network File System (NFS) file server to any NFS-capable platform.

According to the Morgan Hill, Calif., company, SoftNet NFS is available in two versions: the Personal Edition, which lets one NFS platform access the host Novell server, and the Enterprise Edition, which lets any number of NFS platforms access the server.

The product can run as a NetWare Loadable Module on the host Novell server and can access the Novell file server's directories for high-performance file exchange.

The Personal Edition and the Enterprise Edition are priced at $999 and $2,999, respectively.

▶ *Puzzle Systems (408) 779-9909*

American Power Conversion Corp. has announced the PowerNet SNMP Adapter for Ethernet.

According to the West Kingston, R.I., company, the product connects a single uninterruptible power supply (UPS) to an Ethernet network through a 10Base-T LAN attachment. It runs a Simple Network Management Protocol (SNMP) agent that communicates to the Smart-UPS or Matrix-UPS through the company's UPS-Link control language and over the network to a Network Management Station through SNMP.

The product warns network managers about blackouts, brownouts, dead batteries or other conditions.

The PowerNet SNMP Adapter for Ethernet costs $399.

▶ *American Power Conversion (401) 789-5735*

BlueLine Software, Inc. has announced Vital Signs for LANs Version 2, a PC-based performance monitor for centralized monitoring of multiprotocol Ethernet and Token Ring LANs.

According to the Minneapolis company, Vital Signs for LANs directs the collected statistics to Vital Signs for VTAM, BlueLine's host-based SNA performance monitor.

The product also uses a Simple Network Management Protocol connection with Novell, Inc.'s NetWare LANalyzer Agent to offer statistical analysis, reporting and monitoring for IBM's LAN Server, Microsoft Corp.'s LAN Manager, Banyan Systems, Inc.'s Vines, Apple Computer, Inc.'s AppleTalk and TCP/IP-based LANs. Vital Signs for LANs enables companies to identify LAN bottlenecks, isolate distributed LAN problems and conduct performance analysis and capacity planning.

A permanent license for Version 2 starts at $7,500 for up to three LANs.

▶ *BlueLine Software (612) 542-1072*

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Boole dives into distributed systems

By Craig Stedman

■ After dipping a toe in the client/server waters with its Command/Post fault management software, Boole & Babbage, Inc. is going for a more complete Unix immersion.

The vendor's most recent step into Unix and client/server was its acquisition of Sysnet, Norwegian-developed distributed systems administration tools that support a mix of central and local management.

That mixture, and the flexibility it augers, intrigues C. J. Combs, a systems analyst and Command/Post user at Pacific Bell's data center in Hayward, Calif. "You have to keep [server] independence at some times, but then you want a hierarchical view at others," he said.

A lack of system administration capabilities "has been one of the historical weaknesses of Unix," and Command/Post is no exception, Combs added. Command/Post has been "pretty robust" for detecting and managing system faults, but Pacific Bell currently must do most administrative functions manually.

Boole & Babbage's Sysnet *gives managers an affordable icon-based view of the enterprise system and is said to beat the competition by also offering a local system view*

Boole completed its $4.1 million purchase of the Sysnet software last week and said U.S. marketing will begin immediately. The deal is meant to give the company an answer to Computer Associates International, Inc.'s CA-Unicenter for Unix and emerging client/server management frameworks from upstart vendors such as Tivoli Systems, Inc. and OpenVision.

As it tries to expand beyond the mainframe software business, Boole & Babbage is counting on Sysnet, written by Sysnet A.S. in Oslo, to make its client/server system management offering more useful and affordable for users than Command/Post has been by itself.

Jim Black, senior vice president of engineering at Boole & Babbage in San Jose, Calif., said the company has sold Command/Post to more than 70 customers.

Boole, *page 73*

Sam Albert

A platform to stand on

It must seem to IBM that the cacophony of criticism being leveled at its 6-year-old AS/400 platform is equaled by the torrent of Whitewater flak aimed at the Clintons.

Unix lobbyists and advocates of commodity computing have offered "helpful" advice along the lines of "milk this cash cow 'til it drops and then forget about it."

We have no idea in which direction the Whitewater facts will flow, but we surely don't need special counsels and congressional hearings to conclude that the AS/400 is going to stick around.

Still stylish after all these years

The "AS" in AS/400 fittingly stands for Applications System. Tens of thousands of commercial applications now running on more than a quarter-million AS/400 platforms aren't likely to go out of style in the foreseeable future.

Compared with the seductive charms of newer, alternative platforms and the economic (if not operational) charisma of commodity computing, the AS/400 might seem to some just a bit behind the times.

To them IBM could say, "It's the software, stupid!"

Hundreds of independent software houses have churned out more than 22,000 commercial solutions specifically designed to run on the AS/400 platform. What Unix-based system can

Albert, *page 74*

SAS trio works for client/server

By Rosemary Cafasso

■ SAS Institute, Inc. plans to soon complete a trio of features that would allow users to assign data and processing functions across various systems to configure a client/server network more efficiently.

Observers said the move is a step toward a more feasible client/server environment.

Remote Library Service, a function that allows users to automatically access and edit data that lives on a remote processor, is currently in beta testing and is scheduled for June shipment. It will join two other processing functions — Data Transfer Service and Remote Compute Service — and complete what SAS is billing as its client/server strategy services. Data Transfer Service provides data downloads, and Remote Compute allows users to select a remote system to process tasks.

Multifaceted environment

What is key, according to users, is providing the capability to set up an environment that accommodates multiple approaches to client/server computing.

In some cases, Data Transfer would be the best choice. For example, a user may need a collection of data to work with over an extended period of time and find it makes sense to download it from a mainframe and keep it locally. In other cases, involving heavy number-crunching, the user would be better off assigning this task to a remote server via the Remote Compute Service rather than bog down his own system with the job.

In still other cases, a user could select Remote Library Services if he were working with more dynamic data that resided in another location, a circumstance in which Data Transfer would be too time consuming.

"This gives you the tools to connect to multiple platforms and access data in multiple forms," said Dan Bruns, systems programmer at the Tennessee Valley Authority in Knoxville, which is working with the trio of SAS functions.

The SAS functions are offered as built-in components in SAS/Connect, a communications package that works with the SAS System, the company's base offering for data management. The tools are geared primarily for the SAS environment, although users can access non-SAS data.

"I think they have a reasonable model for client/server," said Howard Dresner, an analyst at Gartner Group, Inc. in Stamford, Conn.

While SAS has essentially completed the basic tools, it is still working to fine-tune the functions, particularly with the Remote Library Service. It also plans to add administrative capabilities that would cut back on the user's responsibilities.

For example, a user must currently know where data resides to download or access it. SAS is working on an integrated data dictionary that would include information on the location of data, said John McIntyre, program manager for enterprise computing at SAS. He said the dictionary is targeted for shipment with the next major release of the SAS System, now slated for 1995.

At a glance

CLIENT/SERVER FUNCTIONS IN THE SAS SYSTEM

- **DATA TRANSFER SERVICE:** Copies files or data from SAS or other database management systems to selected platform.
- **REMOTE COMPUTE SERVICE:** Redirects instructions from one SAS platform to execute on a remote or server platform.
- **REMOTE LIBRARY SERVICE:** Automates data movement, allowing clients to access and edit remote data without performing data transfer.

Looking for a solution

"This is a strong implementation of client/server-oriented data access for large organizations," said Ken McPherson, president of Red Brook Technologies, a consulting firm in Framingham, Mass. "I'd like to see code that looks at available resources and decides how it all should be done. That's when it would be a full-blown solution."

For now, however, several users who are working with the full set of functions, including the beta version of Remote Library Service, say they show promise.

"Our direction as a company is client/server," said Harmon Jollie, project manager at Provident Life and Accident Insurance Co. in Chattanooga, Tenn. "We've invested heavily in workstations, but a lot of data has to be on the mainframe. This gives us a way of giving users data no matter where the data is."

When some companies sell client/server to an enterprise, there's one thing they seem to forget.

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Introduction

Interoperability has been promised by vendors for many years. Despite the promises, however, it seems no one has really achieved it. Will interoperability continue to be an unfulfilled promise? Is it true that end users are abandoning their hope for open systems and interoperability?

No way. In fact, quite to the contrary, successful migration from proprietary to open environments is happening now. Interoperability is blossoming in different kinds of organizations around the globe.

The Open Software Foundation (OSF) is playing a major role in making interoperable computing a reality. Before OSF was formed six years ago, the computing world was dominated by competing vendors that refused to agree on standards. OSF cultivated cooperation so most of these competitors could agree on open technology.

Now, while these vendors continue to compete, they also cooperate. They have recognized the need for standard, open systems and are offering products based on OSF technologies, such as the OSF/Motif graphical user interface and the OSF Distributed Computing Environment (DCE). DCE provides integrated services that support the use, development and maintenance of distributed applications.

The biggest hindrance to open systems has been the difficulty in making heterogeneous end-user computing platforms work together. Information systems managers recognize that this interoperability between their disparate systems is crucial to the success of their companies. They also recognize that open systems and interoperability promise flexibility, support for evolving business models and reduced costs.

But interoperability is not easy to realize, nor is it achieved overnight. Many organizations are waiting to implement it until enabling technologies mature. Distributed computing is emerging as an important building block for interoperable heterogeneous environments and DCE is becoming the standard technology offered by most of the major computer vendors. In fact, it is because of DCE that a growing number of end-user organizations are now migrating to open, interoperable environments. Although DCE migration takes several years, these pioneers are emerging with highly successful results.

Some of these corporations are gaining significant competitive advantages in their industries, and are keeping their migration plans a tightly-held secret. Like other organizations, they are saving millions of dollars in mainframe maintenance costs after migrating to DCE-based distributed workstations and servers. Global organizations are finding that the easier end-user access associated with a distributed computing model helps them conduct business much more effectively.

This White Paper was written by Mary Hubley, Datapro Information Services Group.
For more information on the White Paper Program, please call 508-879-0700.

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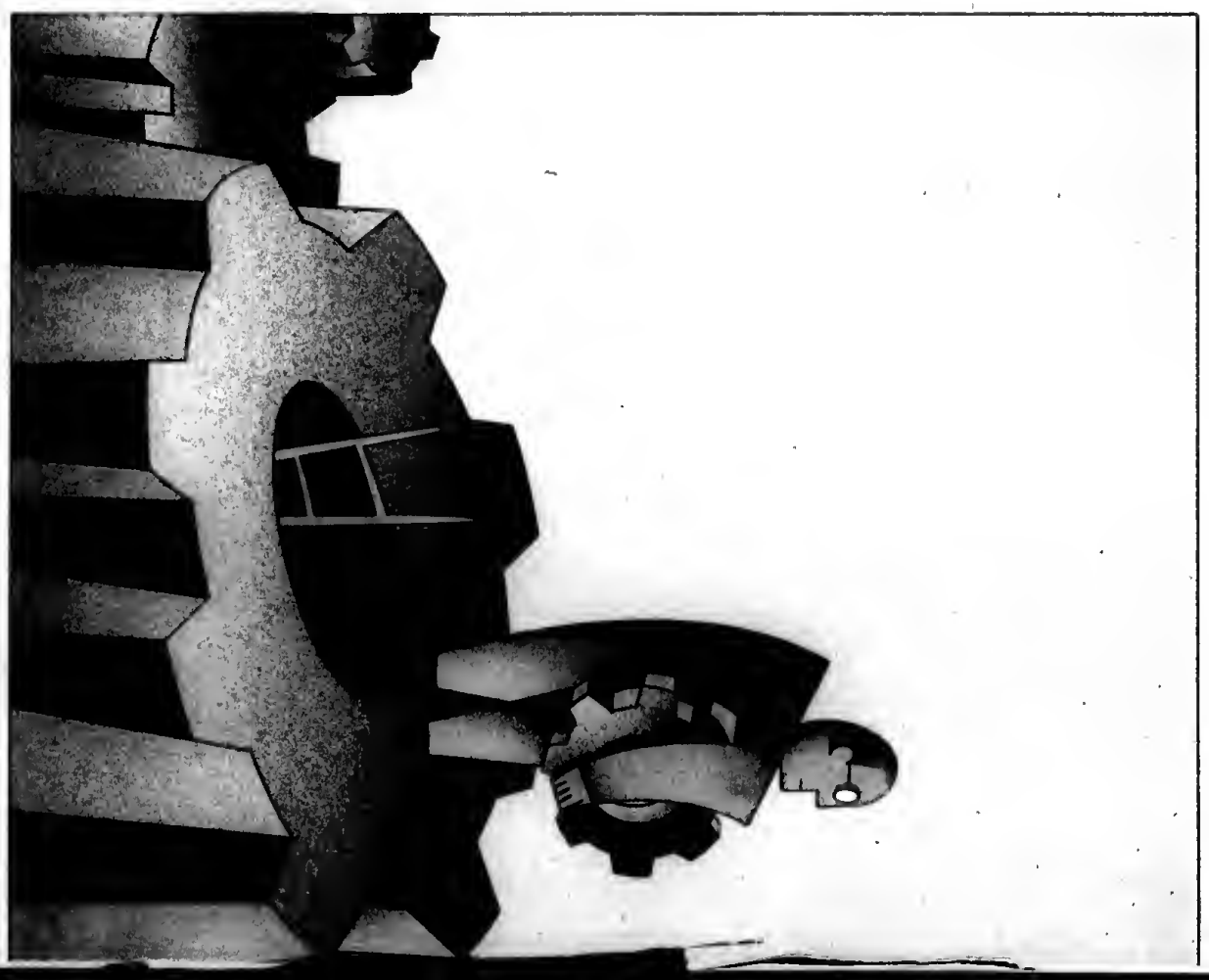

Achieving Interoperability

Open, interoperable computing allows users to draw resources from, and share applications among, multiple platforms, regardless of operating systems or hardware. Open, interoperable environments are typically heterogeneous, containing a mix of proprietary mainframes and minicomputers, Unix servers and workstations, and PC LANs.

After information technology organizations began integrating this mix with their traditionally proprietary systems, a disturbing problem emerged. The new components did not work together across the entire enterprise. That is why the industry has rallied around standard infrastructures — such as the Open Software Foundation's Distributed Computing Environment (DCE) — that provide interoperability among disparate platforms.

As evidenced by attendance at seminars and trade shows, end users are clamoring for information on interoperability, open systems and distributed computing.

Larger organizations are the trailblazers. Early implementers include financial

institutions, commercial businesses, telecommunication service and equipment providers, engineering and research organizations, and universities. Many of these early implementers enthusiastically embrace new technologies. Because many have worked in Unix and TCP/IP environments, they are already comfortable with open interoperability, and have moved quickly with DCE.

As these trailblazers prove DCE's viability, Datapro expects that a new generation of end-user organizations will begin planning for this distributed computing tool. However, many of these companies will hold off on implementation until existing DCE installations mature and supporting technologies stabilize. Prominent among these supporting technologies are development tools and application subsystems such as online transaction processing (OLTP) and relational database management systems (RDBMSs).

"Engineers that were originally nervous about making changes have been convinced by the success of DCE."

Yuichi Suzuki, Secom

IS IT TAKING TOO LONG?

While the concept of open systems and distributed computing has been around for years, it has been only in the past few months that standardized, distributed heterogeneous computing, the most viable embodiment of open systems, has emerged.

To implement an interoperable environment, end users must understand how it works, weigh the costs, and determine the effects on their businesses. They must also take the time to understand DCE, which has only been commercially available for less than a year.

Most DCE projects based on commercial releases are still in the justification and planning stages. For some, the lack of supporting commercial software is stalling migrations. Once richer tools emerge, end users will find that developing distributed applications and managing a distributed environment will be faster and easier.

The OSF Distributed Management Environment (DME) provides DCE-enabled management services. The administration capabilities in DCE will be consolidated under DME to provide a user-programmable mechanism for managing the distributed environment. Further, a number of companies are shipping DCE-based tools that include value-added services.

End users are accomplishing successful implementations, but their successes have not been instant, nor have they been easy. Action is the key. According to OSF's Ram Kumar, "If you sit and wait for standards nirvana, you will sink your business. So, you move those pieces that can be moved to a standards base."

How fast can end users migrate to a standard interoperable environment? It depends, according to Alfred Spector, president and CEO of Transarc Corp., a commercial supplier of DCE for Solaris, AIX and its own Encina OLTP system. "It's one thing to have 50 machines and another to have 5,000," says Spector. "For a large environment, just deciding what to do with DCE will take a while. You have to decide on a strategy, the functions to automate, what to put on workstations, and what to put in central offices and branch offices. After that, you have the implementation phase."

DCE trailblazers are located around the world, and include such notable organizations as British Telecom, AEG/Daimler Benz, Secom (see sidebar), ELF, Barclays (see sidebar), York University, Bellcore, the University of Michigan (see sidebar), Charles Schwab, EDS, Lawrence Livermore National Laboratories, Argonne National Laboratories (see sidebar), and Loral. According to Yuichi Suzuki of Secom, the largest Japanese security system supplier, its DCE move was worth it. "Changes have already occurred in our organization," he notes. "Engineers who were originally nervous about making changes have been convinced by its success." This conviction is common among most of these early DCE pioneers.

National Storage Laboratories — a collaborative effort between Lawrence Livermore National Laboratories, the Department of Energy National Laboratories and industrial partners — has also successfully implemented DCE as the infrastructure for a new large-scale, high-performance hierarchical storage system.

Dick Watson, program leader at National Storage, explains the advantages of DCE: "We use the DCE security environment, remote procedure call (RPC) mechanisms and other DCE services. We also use Transarc's Encina OLTP offering. DCE provides a lot of the services that we would have had to write from scratch, like remote procedure calls, threads and security. So we use these basic building blocks to build higher level things like file servers. And, assuming that many vendors will be supporting DCE, it will be much easier to port to other vendor platforms."

It takes several years to implement a successful migration to DCE. Detailed planning is required, strategies must be formed to convince management, and then multi-year phased development must take place. Because of the complexity in moving to an open systems architecture, many organizations have eliminated firm deadlines in favor of flexible time limits.

The four biggest roadblocks to open systems implementation are sluggish standards, DCE incompati-

bility, migration difficulties and end-user inertia.

Sluggish Standards

Industry standards are emerging much too slowly; some open systems standards have been in development for 10 years. Users need standard products now, not sometime in the future. All major vendors have announced DCE support, which means that competing standards should not handicap the development of distributed computing technology.

Lack of Software

While DCE provides distributed computing technology for many products, enabling technologies — specifically application development and management tools — have not yet emerged. Although some products that support DCE, such as Transarc's Encina, are appearing, most products are still in development. However, many independent software vendors (ISVs) are making DCE support a priority for 1994. Several ISVs and DCE providers are readying application development tools and DCE-enabled management services using technology provided in DME.

Migration Difficulties

Migrating from existing systems to a distributed computing environment is extremely complex and slow. Migrations require intensive planning that must consider innumerable variables. Moving to a distributed environment requires a strategic shift across the entire enterprise. In addition to technical changes, organizational procedures and policies are affected.

Technology such as DCE decreases the complexity of moving to distributed computing. It does this by providing features that reduce the number of variables that must be addressed. It also simplifies transition costs and lessens dependence on multiple vendors.

End-user Inertia

Generally, organizations are slow to make major changes, and information technology departments are

Secom's Computerized Security System

Rising maintenance costs, the lack of computing flexibility and a growing number of customers straining the current system were the reasons that Secom, the largest security services provider in Japan, is migrating from its traditional SNA-based architecture to a sprawling, interoperable system.

Secom has 325,000 customers who have 30 million fire sensors and burglar alarms in their offices and private residences. Customers are monitored 24 hours a day with online detecting and dispatching systems. In addition, Secom supports the largest computer network in Japan, called Secom-Net. Secom Information System (SIS) is a subsidiary company that develops, maintains and operates the Computerized Security System (CSS) and network.

CSS's old model was hierarchical, with IBM mainframes controlling 18 Stratus Computer Series 88 fault-tolerant distributed controllers performing regional monitoring and dispatching. Every distributed controller was connected to 400 processors, each of which gathered customer security data from the 30 million sensors. Software included MVS/ESA, mainframe-based CICS applications, DOS and non-integrated DB2 and ISAM DBMSs.

Secom initiated massive changes in 1990. The project, called Secom Philosophy for Strategic Planning toward the 21st Century (SP21), was an intensive effort that required re-engineering the organization and creating a more flexible, expandable and distributed network.

The SP21 project consisted of several teams working on different phases. Preliminary teams took a year to analyze, plan, evaluate technologies and design a prototype. After these teams proved the viability of migration, an implementation team took over. The resulting architecture includes a distributed client/server model, an integrated database, and a multivendor open systems foundation.

DCE is a critical component. Secom has implemented 20 DCE cells that maintain the location-independence of servers and enable the easy installation of client/server applications. Secom developed several management applications that help maintain the network and the large number of systems it supports.

These applications include a software distribution system and an event-handling facility. In addition, because the system was developed before the arrival of the Open Software Foundation's Distributed Management Environment (DME), Secom also developed its own system and network management applications. The company is in its final stages of testing, and is planning to launch its new interoperable system this spring.

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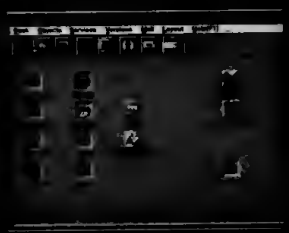

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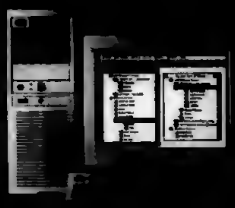

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no different. The first step toward change is convincing management of the need. Rather than trying to sell management on the technological value, however, it is better to focus on the business value, including saving money and laying a foundation for re-engineering.

Once management approval is secured, the next steps are developing a plan to deal with mission-critical legacy applications, evaluating hardware and software, and developing an architecture. Education is also important. Training courses are essential for developers and system administrators.

OSF provides source technologies that allow product developers to implement stable products at a much faster rate.

Organizations that wait until the "perfect" product appears, or even until technologies stabilize, are at risk of being left behind.

PILOT PROJECTS

According to Dr. Paul King, senior research and development engineer of the Cooperative Research Centre for Distributed Systems Technology, flexibility is critical to developing successful plans and timetables. The center is a collaborative research effort among five universities and five corporations in Australia.

"Our participants all have some interest in DCE but have different time scales planned for its deployment," says King. "Some of the organizations are in the wait-and-see mode, others are in the training phase, others have pilot projects, and some have projects underway or near completion."

Many migrators find that pilot projects are valuable. Pilots allow them to concentrate on one area, rather than an entire enterprise. That way, problems do not disrupt the entire organization. Pilot projects also provide a valuable training ground for developers. Once a team has successfully completed a pilot project, it can more easily work on a broader scale and offer its new-found knowledge to other end users.

Despite their value, however, pilot projects are not the only solution. Secom Information Systems is a good example of a company that migrated to a new DCE-based architecture without a pilot.

VENDORS ARE HELPING

As more customers demand open, distributed computing, more vendors are responding with products and support. Hardware vendors offer DCE and Motif for their specific platforms, tools for building distributed applications, DCE training courses, consulting services, and technical support.

Software vendors are also beginning to develop DCE-ready applications. Oracle, for instance, has made a major commitment to support OSF technologies, and has an active DCE development program underway for its DCE SQL*Net adapter.

According to Mark Johnson, Unix system architect at Oracle, this adapter will allow Oracle tools and applications to run on DCE. "Our customer base wants to take advantage of both existing Oracle products and DCE," he explains. "At Challenge '93, OSF's exhibition of DCE-ready technologies, we showed DCE SQL*Net adapter on NCR and IBM AIX machines running essentially every Oracle application."

End-user organizations require varying degrees of technical support. Some prefer their vendors to help architect an entire migration project, while others require support only when they reach a technical impasse. Vendors are becoming much more adept at meeting this diversity of needs.

THE ROLE OF OSF

Before OSF came on the scene six years ago, open systems were little more than a technological glimmer. The computer market was controlled by proprietary vendors that fiercely protected their customer bases. But the nascent promise of open systems convinced end users to seek alternatives. OSF brought together rival vendors and encouraged them to develop open technologies.

OSF membership comprises over 400 organizations, including most major computer system and software vendors, and many end-user organizations. These members all contribute to the determination and development of OSF technologies. In addition, rather than simply developing specifications as is done in most standards organizations, OSF also provides source technologies that allow product developers to implement stable products at a much faster pace. While X/Open plays a key role in the standards definition and requirements process, OSF actually ensures that technology is developed.

OSF has become the dominant provider of standard infrastructure technology. Because of its careful attention to industry needs, OSF's products are considered standards even before they are developed. OSF's most significant accomplishments are OSF/Motif and DCE.

OSF Serves Users

OSF's End User Steering Committee champions end-user causes within the organization. Through regular meetings, end users on the steering committee share experiences, identify common requirements and interact with the vendors who are also part of OSF's community.

Theodore Hanss is director of the University of Michigan's Center for Information Technology Integration, which is currently conducting a large-scale DCE migration (see sidebar). He is also chairman of the OSF End User Steering Committee.

According to Hanss, end-user requirements are being met more effectively because of the steering committee. "Our committee amplifies the end-user voice," he says. "We have had occasions when we've been able to get more constructive action together than by working separately. Also by sharing information among ourselves, we can learn from each other's experiences."

Cost Justification

Information technology departments are increasingly being targeted by management as areas of decreasing, not increasing, investment. Despite this negative scenario, however, information technology groups in some of the world's most cost-conscious organizations are obtaining approval for multimillion-dollar upgrades. How do they do it? One way is by viewing the situation from management's perspective. These information technology groups help management analyze how changes will help them do their jobs better, and then follow up with a concise cost/benefit analysis. They examine how the new technologies will support the business process, and persuade management that new technologies are strategic to the process. Consider the following arguments:

Technology empowers business process re-engineering. Moving to an interoperable architecture allows the engineering, marketing and sales systems to support cross-functional activity through better communication and information sharing.

Distributed architectures can be structured in a way that matches the organization. Rather than making

Barclays Bank's Conversion to Open Systems

Barclays Bank, one of the top 20 banks in the world, with 60,000 employees worldwide and offices in every major country, has been making a move to open systems because of the overwhelming business advantages. Those advantages include the ability to:

Expedite business process re-engineering. Open systems allow groups to change their business without technology getting in the way.

Facilitate the growing use of human networking. Open systems allow groups of people from different parts of the organization to work together to solve common business problems.

Speed the delivery of solutions. Open systems make it easier to reuse components across the operation, making solutions much faster to develop.

Cut costs. Open systems reduce the number of different infrastructures that need to be supported, thus reducing maintenance costs.

According to Dave King, product manager for Barclays Bank Group Technology Architecture, open systems are also being implemented to provide scalability and to avoid vendor lock-in.

"When we looked around at what technologies we needed for the infrastructure, some of them came out of the Open Software Foundation," says King. "We were pleased to see Distributed Computing Environment (DCE) introduced because we do a lot of distributed computing at the bank anyway. Therefore, having an infrastructure that we could extend groupwide, instead of having different kinds of infrastructures in different business units, appealed to us."

Barclays' architecture is based on DCE and X/Open's XPG4 operating system application program interfaces. Unix systems are currently the open systems platforms most often specified by Barclays' different groups.

DCE is initially employed in LANs at centralized banking offices, where DCE functions as the network connection between servers. Barclays is planning to implement DCE and open systems across more of its organization, but the task is massive.

In just the UK instance, Barclays' wide area X.25 network has 2,000 branches. These branches run SNA protocols that communicate with IBM mainframes located at two major centers. One roadblock to implementing open systems across the entire organization is the unwillingness of business units to adopt open systems: Units that have multimillion-dollar infrastructures with legacy applications are not inclined to re-engineer their entire environment simply to keep up with corporate models. An open systems solution is more likely to win when a unit needs new functions or applications.

Typically, open systems are being introduced in branch-level customer information system front ends. For instance, one application that was developed completely in an open systems environment monitors large corporate customers' loans on a worldwide basis. Such applications run on new operating systems, GUIs, and development tools, and conform to the new architecture. In addition, these applications must also continue to communicate with the IBM mainframes that run the back end processing.

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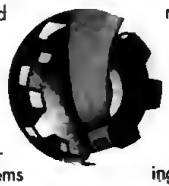
The University of Michigan's Institutional File System (IFS) Project

The University of Michigan is achieving its goal of building a large interoperable, heterogeneous computing environment through the creation of its Institutional File System (IFS). IFS provides a file sharing environment for the school's three IBM mainframes, and is transparent to the large number of Unix, DOS and Macintosh client platforms.

The university includes 17 schools and colleges, 35,000 students, 24,000 faculty and staff, and over 200 buildings covering 2,600 acres. The computing environment consists of 18,000 desktop workstations, the three IBM mainframes, fiber-optic backbone networks and several LANs.



Like other large organizations, the university must continue to support its legacy systems as it incorporates new technologies and interconnects a growing number of dissimilar computers, operating systems and networks.

The university's Center for Information Technology Integration (CITI) is in charge of the project. In cooperation with IBM, this research and development organization developed an infrastructure that joins its thousands of dissimilar computers by using the Open Software Foundation's (OSF's) Distributed Computing Environment (DCE).

When it was formed eight years ago, CITI began implementing the most up-to-date technologies available. DCE was chosen as the technology infrastructure. The organization has continued its tradition of exploring leading-edge technologies, focusing on those that are most widely endorsed by vendors to ensure the best interoperability.

"Over the past couple of years, we've been trying to unify the personal computing into a coherent enterprise approach to sharing information and communication among people."

— Theodore A. Hanss, Jr., of the University of Michigan

Theodore A. Hanss, Jr., director of CITI, believes the IFS environment will continue to evolve. "You're never done," says Hanss. "We are always working on enhancing component technology. We went through models in the '60s and '70s in mainframe computing. We skipped the minicomputer age because we had such an easy-to-use mainframe environment and went right to personal computing. Over the past couple of years, we've been trying to unify the personal computing into a coherent enterprise approach to sharing information and communication among people."

In addition to implementing DCE throughout the campus, CITI also develops DCE technology and offers much of it free for others to use. One such development project resulted in OSF's Demographic Demonstration Program, a geographic information system that interactively demonstrates DCE components. In addition, CITI was also one of the first organizations to offer courses on DCE and OSF's Distributed Management Environment (DME).

In addition to interoperability, CITI is also investigating object technology, including operating systems and development tools. Beyond that, it has even more advanced projects in the works. "We feel that desktop computing will be an anachronism by the end of the decade because people will just compute where they are," says Hanss. With that in mind, CITI is working on providing cellular links and disconnected operations using advanced caching techniques to connect to client/server systems.

Massively parallel systems are also being implemented at the university. In addition to their use with scientific and engineering applications, those systems are also being applied by social scientists. For instance, the social scientists use large data sets, such as U.S. census data, and traditionally crunched the numbers using a special FORTRAN program. Data was stored on two dozen reels of mainframe tape. IFS now lets the social scientists move their data online in a 10G byte space, and use off-the-shelf Unix tools such as SAS and SPSS to process the data. The social scientists are also now able to write their own utilities.

Now, instead of doing analysis that used to take weeks to plan and run, they can get a response within seconds. Their whole way of interacting with data has improved by placing it online and making it more accessible.

Argonne National Laboratory's Advanced Photon Source Project

Argonne National Laboratory's $467 million Advanced Photon Source (APS) Project is dedicated to developing a positron particle accelerator that will be used to generate more powerful X-rays. The laboratory, which is part of the U.S. Energy Department, is being used by industrial and university researchers who have an interest in materials and medical research.

The evolving APS project, much of which is still under development, is being built entirely with an open systems architecture that will offer flexible, easy information access to its 500 engineers and scientists as well as outside researchers. In this heterogeneous environment, researchers are encouraged to bring in their own computer systems including OpenVMS, varying Unix implementations, Windows NT, Macintoshes, Windows, and MVS. Physically, APS's infrastructure consists of a fiber-optic Fiber Distributed Data Interface (FDDI) backbone throughout the laboratory, with local Ethernet branches. There are a variety of network products providing connectivity to both the proprietary and open systems hardware platforms. Network File System (NFS) and Andrew File System (AFS) are also used, although they are being phased out as the Open Software Foundation's Distributed Computing Environment (DCE) is phased in. DCE will eventually be supported throughout the laboratory as more vendor implementations emerge and as key people complete training. Argonne's development involves taking advantage of existing technology, keeping track of standards and planning for new technology. Argonne just left phase 1, which consisted of supporting existing technologies while purchasing new standards-based products. In phase 2, the engineers are deploying the new technologies and implementing DCE as it becomes available. Development is being performed mostly by Argonne's computer scientists.

"Vendors are offering engineering services," says Mark Anderson, APS computer scientist. "But here, we tend to take the responsibility ourselves, partly because we're a research organization and partly because we like to keep direct control. But if we run into problems, we would be able to call our vendors such as HP and DEC."

the organization fit the computer as has been the case for many years, an open, interoperable structure allows technologies to fit the organization.

There may be immediate cost benefits. With the money some organizations save from realigning their mainframe-oriented environments, they can purchase new workstations and servers.

Pilot projects cost much less than moving the entire enterprise. With a pilot program, benefits can be proven to management, making a larger project much more feasible.

Open, interoperable technology is a better way to do business. It allows equal access to information across an organization and reduces interface problems.

Making Environments Open

OSF's technologies have made the world take open systems seriously. The Motif graphical user interface was OSF's first success. Motif accomplishes what no other product had done in the past: It standardizes the interface of open systems.

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Conclusion

The rewards of interoperable computing are worth the investment. With open systems, users are released from vendor lock-in, and free to configure hardware and software in an environment that suits the business structure. There is also a substantial cost benefit to purchasing commodity products.

The barriers are not insurmountable. Many user organizations are building successful DCE implementations. These pioneers are at the forefront of the move to enterprise-wide, interoperable systems, a move that promises to pervade all user organizations over the next five years. ■

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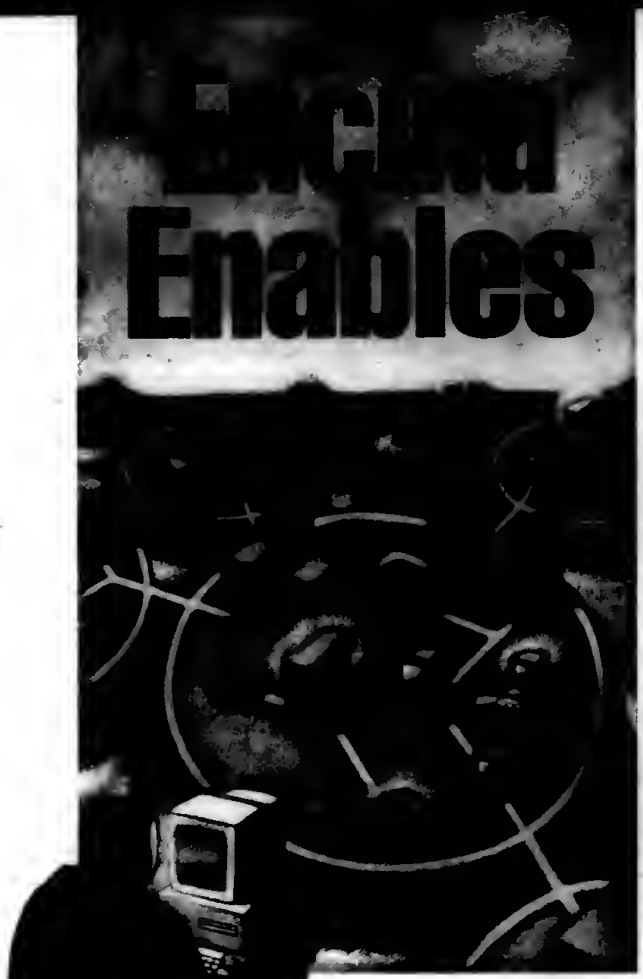

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Unisys users say services need exposure

By Thomas Hoffman
NASHVILLE

■ While Unisys Corp. has some positive early results to show in its transition to a more services-driven provider, user reaction is mixed, and the vendor clearly has some marketing to do.

Many of the 1,800-plus users who attended the recent Unite North America Unisys User Association conference here said they were unaware of the variety of consulting, outsourcing and specialty services offered by the Blue Bell, Pa.-based vendor.

In 1993, the vendor's services revenue jumped 19% to $1.6 billion due to key contract wins that helped the company replace its dwindling big iron sales (see chart). One example was a $25 million deal to build a new computing infrastructure for the NASDAQ over-the-counter stock exchange.

Yet the majority of users interviewed at the conference said they have remained loyal Unisys shops primarily because of the support and technical services they have received from the vendor.

However, when it comes to professional services, many said their organizations know little about Unisys' expertise in areas such as outsourcing and business process re-engineering.

"I'm not sure if we'd contract Unisys for professional services since we do most of our work in-house," said Mark A. Winburn, a test-bed supervisor at the Society for Worldwide Interbank Financial Telecommunications, Inc. (SWIFT) in Culpeper, Va.

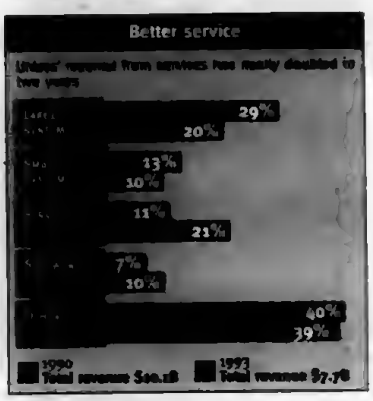
Winburn said SWIFT, which is in the process of re-engineering its worldwide computing operations, relied on Cap Gemini America, Inc. for consulting services while tapping Unisys for 11 new A Series mainframes that are expected to be installed and running by July.

Consultants from all over

For its part, Unisys hired more than 100 consultants last year from leading competitors such as McKinsey & Co., Andersen Consulting and Coopers & Lybrand, according to James A. Unruh, Unisys' chairman and chief executive.

Since Unisys lured Victor Millar from Andersen Consulting to oversee its Worldwide Information Services division 17 months ago, the unit has landed a number of lofty contracts, including a $127 million deal last month to automate the Savings Bank of the Russian Federation, a $4.25 billion Moscow-based institution with 2,300 branches.

But one early recipient of Unisys' professional services — the state of Michigan's Department of Social Services — said the vendor's capabilities in areas such as Unix application development have been weak.



"It seems that their consulting staff is on the same learning curve that we are," said Stanley R. Bixby, director of the systems development division at the agency's Health and Welfare data center in Lansing, Mich.

While Bixby lauded Unisys for having demonstrated strong services in areas such as telecommunications, he claimed that the vendor has already fallen behind schedule in the first few months of a five-year, $57 million services project called Assist, which was designed to electronically link a variety of departmental agencies.

Curtis Winters Hohenstien, a computer specialist at the Department of the Interior's Bureau of Indian Affairs in Albuquerque, N.M., said he and members of the agency's technical staff usually attend the Unisys user conferences looking for information on Unisys' professional services offerings. However, he said he was not aware of any professional services follow-up by Unisys salespeople.

"I think we'd be interested in talking with [Unisys] about their services. It just doesn't seem that their marketing efforts have reached us," Hohenstien said.

Most users from federal, state and county government agencies said their organizations are too cash-strapped to consider enlisting Unisys for its professional services. That reluctance is based on budget constraints at the agencies — not Unisys pricing of its services, users noted.

Client/server tools

Oracle, HP form integration team

By Kim S. Nash

Oracle Corp. and Hewlett-Packard Co. recently signed a pact to integrate the Oracle relational database with OpenView, HP's network management framework, by late this year. The move is part of Oracle's efforts to answer to users who are dissatisfied with the current crop of client/server systems management tools.

The goal of an HP/Oracle partnership is to let systems administrators monitor activity on the network, among applications and on the Oracle database, from a single OpenView systems management console, the companies said. OpenView will use the Oracle 7 database as a repository for data on performance monitoring and network bottlenecks.

The idea of using fewer management tools to look after complex client/server setups appeals to users who are wary of having to buy just as many caretaking aids as they do products to keep their companies rolling.

"Ideal for us would be one product that monitors both the Unix operating system and the database," said Mark Hutaim, a senior systems analyst at Rockwell International Corp.

Oracle said it hopes to move at least one step closer to this nirvana by linking its database to OpenView. Although Oracle offers some of its own management utilities, the database maker has concentrated on signing up third-parties to port their existing tools to run against the Oracle database.

Rockwell's Downey, Calif.-based Space Division, where Hutaim works, runs Release 7.0.3 of the Oracle database on two HP Unix boxes, among other databases and hardware. The company is looking into third-party products to supplement Oracle's own SQL/DBA, which "doesn't do enough," Hutaim said.

For example, SQL/DBA provides "little to no view into Unix activities, which can and does affect how your database runs," he explained.

No complications

In general, users must now buy and manage separate tools to get a head on network, database and applications activities. As client/server multiplies the number of products in a typical computing scheme, users want a less complicated systems management arrangement.

Some users said they like the idea of not having to buy everything from Oracle but worry that some independent firms — particularly those that primarily cater to mainframe systems — may not understand Unix or relational database issues [CW, Sept. 27, 1993].

However, not all of Oracle's systems management partners come from a mainframe background. Even so, mainframers' historically hierarchical way of looking at the world might do client/server users some good, Hutaim added. "We want that level of monitoring and security" in a distributed environment, he said.

By the wayside

The HP Special Interest Group within the International Oracle Users Group has "fallen by the wayside," said Mike Garbig, former head of the SIG. "Lack of interest and resources" has made the SIG inactive lately, he said.

Boole

CONTINUED FROM PAGE 55

thus far. However, Command/Post is a relatively high-end product because of its support for automated operations and pricing that can reach as high as $250,000 in large installations, he noted.

Not quite ready

Command/Post "is a pretty broad stroke, and customers would say they weren't quite ready to do [automation] yet," Black said. "You need buy-in at the very highest levels for Command/Post. With Sysnet, I can see that being bought by people further down in the organization."

Paul Mason, manager of system-level software research at International Data Corp. in Framingham, Mass., said the automation tools in Command/Post require scripts written in command language and are difficult to use as a result. Beyond that, he said, Command/Post "is little more than a sort of screen-scraper" that provides customers with views into their systems.

"It doesn't really have much in the way of applications with it," Mason said. Sysnet "sounds like it adds some capabilities that Boole can really use. If the stuff really works, it would form a nice basis for a set of distributed system management capabilities."

Sysnet's inclusion of both central- and local-management modules "is a very important attribute" that Tivoli has also promised to support in a new release of its Tivoli Management Environment, which is slated for shipment in the third quarter, Mason said.

By comparison, CA-Unicenter has been oriented more to central control to this point, Mason said. CA has announced a capability for managing multiple CA-Unicenter environments from a single terminal, "but my impression is that's more like Command/Post than it is like Sysnet," Mason said.

Multiple Sysnet Local Managers can be hooked together in a "loose grouping" without a Central Manager, Black said, but he added that most customers are likely to use both products. The Central Manager is priced from $25,000 to $50,000, while Local Managers cost between $3,000 and $5,000.

Sysnet A.S. had sold Sysnet to 20 to 30 customers in Europe, Black said. Standard features include backup and recovery, alert management and administration for systems, users and databases; optional modules include security and performance monitoring. The software runs on a range of Unix platforms, and support for Novell, Inc.'s NetWare is planned within the next year.

Command/Post will include a filter for receiving failure alerts from Sysnet, and tighter integration of the two products is likely over time, Black added.

Albert

CONTINUED FROM PAGE 55

say that?

Despite at least four major technology upgrades and the fact that many of the proven business applications now sport GUIs that allow point-and-click access, the complaints are still there:

- The midrange market is following mainframes down toward commodity hardware and software solutions. With a top-of-the-line AS/400 priced at more than $1 million, it doesn't fit anyone's idea of a "commodity solution."
- The AS/400 has not yet embraced RISC-based, 64-bit hardware technology and its inherent cost advantages.
- Software developers are increasingly looking toward Unix platforms.
- AS/400 client/server capabilities are behind the power curve.

Unix servers generally do have a lower purchase price if you don't bother to figure in software, staffing, education and operating costs. Figure them in and the AS/400's price/performance looks pretty competitive.

Commodity computing isn't for everyone. The AS/400 has its greatest success among customers who don't have the systems expertise or the desire to search out and integrate lots of multivendor products. Integrated solutions that can be tailored to their businesses are very attractive. And the desire of commercial users to protect their investments in applications is sure to be a major factor in the ongoing viability of the AS/400.

While a high-end AS/400 can cost a megabuck or more, it's also true that the AS/400 platform can be entered for less than $10,000. Meanwhile, there are people spending multimegabucks for Unix servers. About three-fourths of all AS/400 sales these days are in the $15,000 to $50,000 range.

Marketable tricks

By this time next year, the AS/400 will be sporting 64-bit PowerPC-compatible RISC technology. This gives IBM a way to leverage more price/performance into the AS/400 while still being able to tell customers they can move up and not worry about their application software investments. Sources say customers won't even have to recompile their programs. Nice, marketable trick.

Some 60% of AS/400 customers use their machines in client/server environments, and many of IBM's software partners are diverting at least some development resources to Unix-based client/server applications.

Heavily redesigned AS/400 systems will be announced very soon that will probably be more competitive client/server platforms. At least they'll be able to port and run Unix-based programs. It may, however, take years before Unix aficionados are satisfied.

With a leading share of 15% in a large market, IBM has to think there's considerable opportunity for growth. About one-third of the AS/400 systems sold each year go to new customers. Some 10% of all installations migrate, upgrade or buy additional AS/400s annually.

However high IBM's investment may be in providing new function and performance for the AS/400, it's going to be worth it. And those of us still around at the turn of the millennium will yet be inventing reasons for its imminent demise.

Albert is president of Sam Albert Associates in Scarsdale, N.Y.

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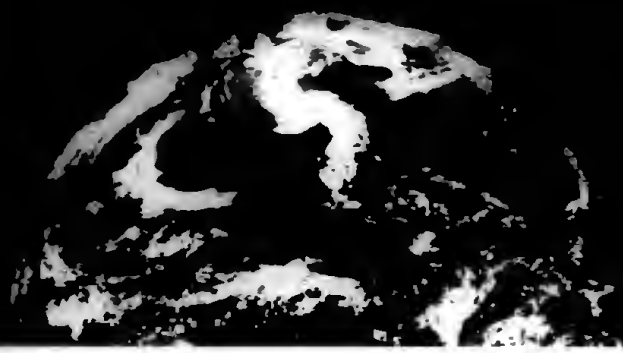

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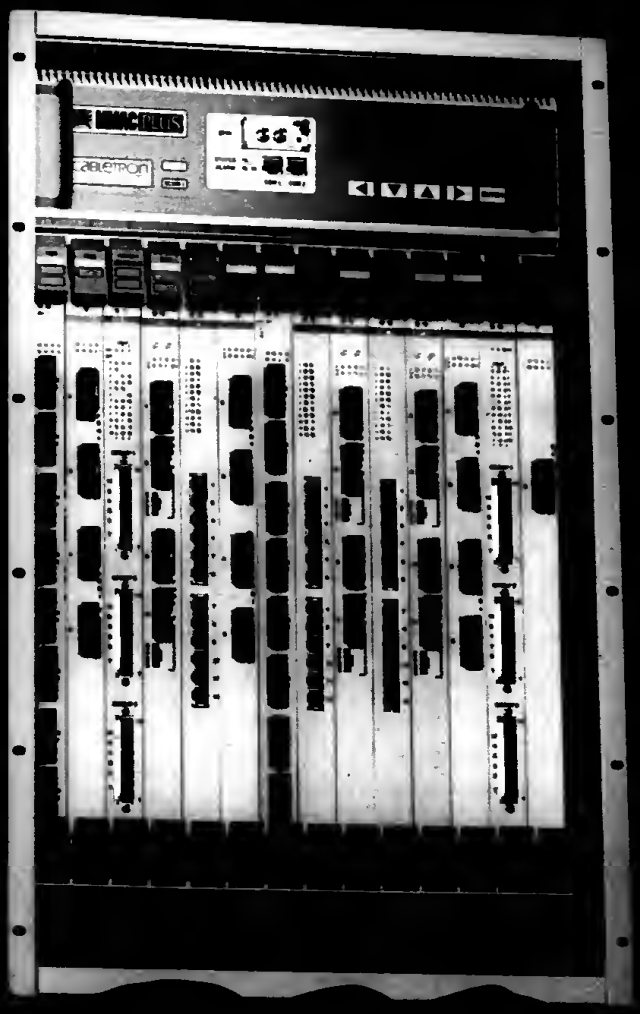

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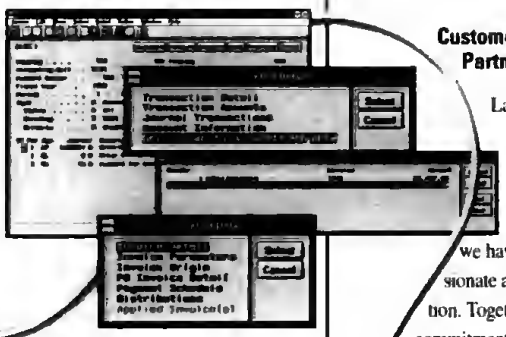

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Application Development

PRODEASYNERGY OFFERS CAIRO-TYPE FUNCTIONALITY TODAY. See story below.

Scott Koehler

Bridging a business gap

The business people huddle and lament, "Those IS types don't understand the business. Why does it take so long to update the computer systems with our requirements? How can we compete at this rate?"

Elsewhere in the same organization, the Cobol programmer struggles with the millions of lines of procedural code that have amassed over the years. While the prevalence of branching logic provides an archaeological reference to the evolution of the business over the years, it does little to facilitate the programmer's job. Implementing a seemingly "small" change might require searching and changing many programs. Unfortunately, the existing programs do not bear much resemblance to the enterprise model for the business.

This radical transformation from real-world

Koehler, *page 83*

Air traffic takes another turn

FAA weighs fixes for automation project

By Gary H. Anthes

The Federal Aviation Administration is considering major changes in its troubled Advanced Automation System (AAS) project, now billions of dollars over budget and years behind schedule.

FAA administrator David R. Hinson told a congressional panel that the agency might scrap the project entirely, although he said some scaling back was more likely. The FAA has spent about $1.5 billion to date on the estimated $6.9 billion air traffic control system.

Another look

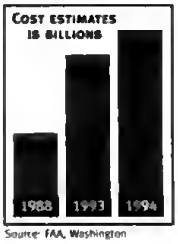
During three hours of grilling by frustrated and at times angry lawmakers, Hinson said all previous assumptions — from the project's use of the Ada programming language to its requirement of less than three seconds of downtime a year — are being reexamined in a study by the Center for Naval Analysis.

"I am dissatisfied with the execution of this program to date," Hinson said. "The AAS program, if unchanged, would pose certain cost and schedule increases that are unacceptable."

Members of the Aviation Subcommittee of the House Committee on Public Works and Transportation, which held a similar hearing on the AAS project a year ago, alleged that little progress has been made since then.

"Goals have not been met, [and] more progress trouble reports have been opened than have been closed," said Rep. James L. Oberstar (D-Minn.), subcommittee chairman. "Software volatility is running 100%, meaning every line of code has to be rewritten at least once, compared to original expectations of a 40% rate."

DAVID FLAHERTY



Source: FAA, Washington

> **"We have no reasonable cost estimate."**
> — Rep. Jay Kim (R-Calif.), April 13, 1994

Reachable goals

But in its testimony, prime contractor Loral Corp. said the project could be salvaged and put on a course that would deliver a system "at a fair cost and in a timely fashion." Chairman Bernard Schwartz said Loral could finish the job for another $2.5 billion, an amount that would bring the total cost to approximately the amount now estimated by the FAA.

The AAS project was given to IBM's Federal Systems Co. subsidiary in 1989, but it was passed to Loral this January after Loral purchased the IBM unit [CW, Dec. 20, 1993].

FAA and contractor representatives said that technology has evolved faster than their ability to employ it since the AAS was conceived.

FAA, *page 82*

Component applications get start with Prodea debut

By William Brandel

■ It is obvious that users and vendors today are moving toward component-based applications for the future. However, big questions remain concerning what kind of technology they will implement to get to plug-and-play applications and when they will have this technology.

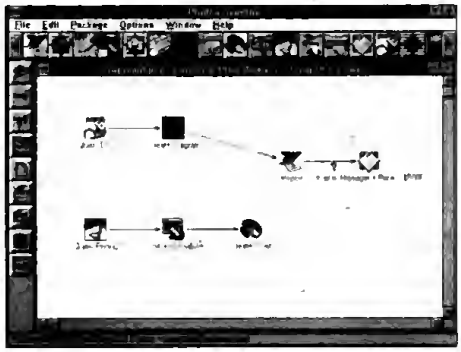
The answer to the second question is that the technology is not as far away as one might think. Granted, commercially available operating systems and system software that fully exploits much-touted object-oriented environments are still in the offing.

For example, Microsoft Corp.'s object-oriented operating system environment, Cairo, as well as IBM and Apple Computer, Inc.'s object-oriented operating system, Taligent, are not expected to ship in the next year.

Looking for solutions

In the meantime, users are looking for ways to link applications or application components to create a customized solution that also takes advantage of their application investments.

As the major players vie for users' future mind share, there is one application that gives users an easy-to-use tool to build plug-and-play applications. Prodea Software Corp. has launched the second version of ProdeaSynergy.



ProdeaSynergy *keeps a list of DOS and Windows applications that function much like future object stores*

Version 2.0 differs from the first version in that it can take advantage of Microsoft's Object Linking and Embedding (OLE) 2.0. In doing so, the product offers Cairo-type functionality today and remains OLE 2.0-compliant for future applications, said Ronni Marshak, an analyst at the Patricia Seybold Group, a consultancy in Boston.

"If you can draw an arrow, you connect Windows applications using this product," Marshak said. "It automates the exchange of data for the user. I haven't seen anything else like it on the market."

Easy to use

The key to ProdeaSynergy is an application services database, which is a predefined list of DOS and Windows applications that will function much like future object stores. The database stores information such as what a program is called or what protocol or file formats the applications support. It also includes the application functions that are used to inform a particular application when it should run its specified task within ProdeaSynergy.

Perhaps more important is that the product is easy to use. The company, Prodea, is modeled after a Minneapolis-based consultancy, formerly called Information Synthesis, that built executive information systems and decision-support systems for customers such as Johnson & Johnson in Skillman, N.J., and Schering-Plough Corp. in Union, N.J. Using the technology it gained building easy-to-use systems for end users, Prodea was able to develop an application integration package that works by simply pointing arrows at icons.

Today, Piper Capital Management in Minneapolis is using ProdeaSynergy to link its shrink-wrapped Windows applications with its customized accounting package. John Schonberg, vice president and portfolio manager at the company — not an information systems staffer — has set up the application himself.

Short learning curve

"It gives us a very easy way to link our Windows applications with a very complicated accounting package without having to learn something like a macro language," Schonberg said. "If a portfolio manager here needs to do an accounting appraisal, all they have to do is choose the accounting application from the library, click on the name of the client from a pop-up menu, point to the word processor, then the printer, and it is done."

Schonberg noted that it took some time to set up the application the way he wanted it.

This is not to say that application linkage itself is not a possibility today. Micro-

Prodea, *page 82*

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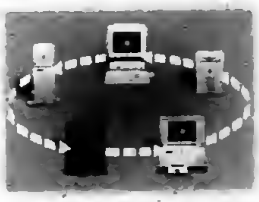

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FAA

CONTINUED FROM PAGE 79

in the mid-1980s. Now, the emergence of extremely powerful workstations and the greater availability of commercial off-the-shelf software may enable the project to save some hardware and software development costs, they said.

Schwartz said the project schedule inherited from IBM entails "excessive risk." He said Loral will employ a "fast track" approach intended to get more user input and earlier operational experience into the development effort.

In essence, that would involve postponing full and formal system acceptance testing while accelerating the use of a prototype system in Seattle. Feedback from air traffic controllers would arrive in time to shape final system design, Schwartz said.

Prodea

CONTINUED FROM PAGE 79

soft delivers tools that enable users of Microsoft products to link components or services of Microsoft applications. These tools are based on Microsoft's general programming language, Visual Basic Application Edition, which now ships with Excel and Access.

But most end users, like Schonberg, are not programmers. Nor are most sites using only Microsoft desktop applications. Microsoft is addressing these users' needs by offering its OLE 2.0 system software as the fix.

The other system software fix from commercial vendors is based on OpenDoc, which is championed by Apple, Novell, Inc. and other vendors. Software developer's kits that support OpenDoc are expected to begin shipping this summer.

Who's to blame?

In recent testimony before Congress, the General Accounting Office did not support last year's recommendation by a presidential commission to turn over parts of the FAA's air traffic control operations to a semiprivate corporation. GAO transportation specialist Allen Li offered these observations about the FAA's problem-wracked AAS project:

- **"First, FAA's and IBM's development and implementation plan, including cost and schedule estimates, was overly ambitious given the highly demanding requirements and the complex software architecture.**
- **"Second, FAA did not provide adequate oversight of IBM's performance, especially during initial development.... As a result, IBM's lack of progress did not always surface in a timely manner.**
- **"Third, FAA was indecisive in resolving some issues about basic requirements.**

"The above factors — not inadequate funding or federal procurement rules, as contended by some proponents of an air traffic control corporation — have caused the AAS's problems."

—Gary H. Anthes

Bender & Associates, Inc. has introduced SoftTest, a functional test-case design tool, that is available on the Windows platform.

According to the Larkspur, Calif., company, SoftTest can be used to test any type of application, written in any language and run on any platform.

SoftTest for Windows was designed for software testers and includes ease-of-use enhancements, increased system limits to allow processing of much larger functions and improved viewing and reporting capabilities.

SoftTest requires Windows 3.1 or higher, with a minimum of 4M bytes of RAM and 2M bytes of free disk space.

The product costs $2,500.

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Koehler

CONTINUED FROM PAGE 79

business requirement to programming language code (common to most IS shops) has contributed to the division between IS groups and their users. Enter business objects. Object-oriented programming focuses on modeling real-world things. Physical or conceptual entities from the business domain, business objects, provide the foundation for the solution to the above situation.

Common language

Business objects can include products, customers, markets and orders. Business objects have attributes and behaviors; they can contain various business rules. When "coded," they look and behave like their real-world counterparts. In fact, the closeness of the source code to the business domain can often be quite astonishing. As a result, software developers begin to talk the same language as the business people. "How is this new product like existing products? How is it different? What's the minimum purchase amount of this product? How is its price determined? Oh, that's the same method as these other products."

Having business people, users, analysts, designers and programmers all speaking a similar language — the language of the business — yields substantial benefits. Miscommunication is minimized, a stronger team attitude is fostered, the software is assembled in the same manner as the complexity present in the real world, and changes in the domain lead to similar changes in the code. Software maintenance is enhanced.

A stitch in time

By abstracting general behavior, much of the application code is already written and tested when the need arises to extend the domain.

A preferred technique for developing object-oriented business systems is to use a layered architecture. Separating the presentation (user interface), business and data-management components into layers allows each layer to focus on its specialty. In a good design, business objects would have little or no awareness of presentation objects that use them.

In addition, layering objects greatly increases the likelihood of reusability. That is, business objects could be used by many applications. Business objects appear when performing object-oriented analysis of the business domain. An object model is constructed showing the relationships among business objects, the attributes and behaviors associated with the business objects and generalized and specialized versions.

Object-oriented design further develops this model by providing the algorithms, data structures and inheritance hierarchies. Business objects can be accessed by other objects or non-object-oriented applications via an API.

Unfortunately, many proponents/users of object technology have not focused on the power of business objects in the enterprise. Rather, the spotlight has been on user interface objects as a way to build event-driven graphical applications. Many visual programming environments skip the business layer by performing the database interactions from within the user interface objects. Thus, business rules are not captured where they belong, and the same rules will likely be replicated in many other applications. If the business objects do not exist, they cannot be reused.

Many companies that have developed business object models are experiencing the benefits of object technology — maintainability, extensibility, quicker time to market and better reuse of code. These companies are better positioned for the future.

Koehler is a principal at Koehler Consulting in Holliston, Mass.

so that database managers could get home from work at a reasonable hour, the developers of Windows NT™ watched many sunrises from behind their MIPS RISC computers.

(They chose machines built around the MIPS RISC architecture for two basic reasons: sheer performance and superior technology. Fact is, the NEC V_R4400™ MIPS processor is at the heart of some of the most powerful computers in the world.)

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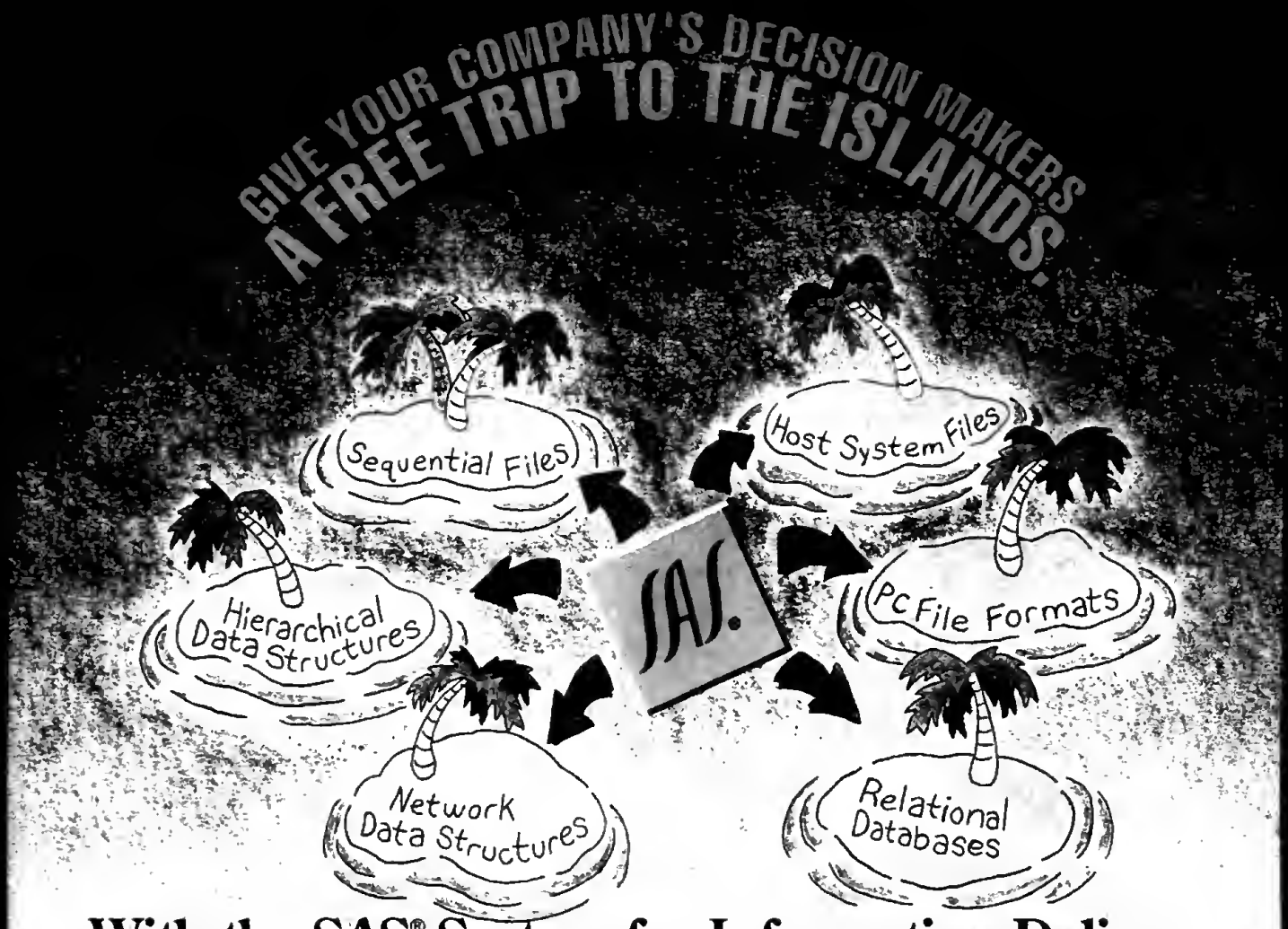

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Foolproof
Want to survive the outsourced, "buy-not-make" '90s? Then sharpen your contract management skills. Learn how on Page 90.

Mark Green

LEARNING EXPERIENCE: Rex Rogers, Dave Gammeli and Mike Blake (left to right) used their JAD project as a mechanism for training staff at Entex

Joint application development can be a great thing. But place too much faith in good intentions and open communications and you'll find out the hard way . . .

WHY JAD GOES BAD

FRUSTRATION HAUNTS JIM GILLASPY. For two years, he interviewed, persuaded and schmoozed to achieve buy-off on his Herculean labors. And at long last he delivered a streamlined order-entry and inventory system to replace the four doddering legacy systems that once ran AJC International, Inc.

BY ROCHELLE GARNER

But at the moment of triumph came disappointment.

"When we finally finished, we discovered to our sorrow that even though people had said they bought into our overall concept, they had not," says Gillaspy, chief information officer at the Atlanta-based export company.

Traders who were supposed to benefit from the new access to timely information refused to use the new system the way it was intended.

The problem was cultural. Accustomed to having assistants enter data into AJC International's computer systems, traders suddenly balked at the requirement that they get keyboard and terminal savvy. They insisted that their assistants continue to do the typing.

So management, which once backed Gillaspy's plans, backed off.

While Gillaspy could claim partial success for now having one streamlined system instead of four archaic ones, the process itself hasn't improved. And the traders have seen little or no benefit.

It shouldn't have happened. Gil-

JAD, *page 88*

Joint application development (JAD) is part of the rapid application development tool kit. It is a series of highly structured interview sessions aimed at reaching consensus on a project's goals and scope. From the moment participants belly up to the conference table, the JAD pros in the room begin to create data models, build process-flow diagrams and shape prototypes that express users' needs and desires.

JAD

CONTINUED FROM PAGE 87

laspy's team spent four months on the organization's first joint application development (JAD) project interviewing 75 of AJC International's 90-person staff, including its two owners. Feedback in hand, he wrote a specification proposal he was sure reflected the needs of would-be users of the new database. Then reality hit.

"I found out that people don't understand what you're trying to do until they see it working," Gillaspy says.

And that, it turns out, highlights what Gillaspy did wrong. He found out the hard way that talking to users isn't enough to succeed at JAD.

What's JAD

Part of the rapid application development (RAD) tool kit, JAD is a series of highly structured interview sessions aimed at reaching consensus on a project's goals and scope. From the moment participants belly up to the conference table, the JAD professionals in the room begin to create data models, build process-flow diagrams and shape prototypes that express users' needs and desires.

What's more, the experts say such near-instantaneous feedback must never stop — continuing in the form of new screens, progress updates and status reports. That's where JAD segues into RAD to provide a constant new cut at the application under development.

"You need a lot of deliverables on a weekly basis so people can see the results coming out of the team," says Peggy Trout, principal consultant at RAD pioneer James Martin Co. in Reston, Va.

If Gillaspy had followed this path, he would have given users a series of working prototypes to snipe at beforehand.

And he might have claimed victory if he had made his first JAD effort a data query project. That way, the traders would immediately recognize the value of using the system themselves rather than letting their assistants do the work for them.

Because the first JAD project is often intended to be a springboard for others, "now his next project has less chance for success," Trout says.

But don't fault Gillaspy for not getting with the program. This JAD stuff isn't intuitive to the untrained.

And therein lies its danger. Proceed blindly into that quicksand of good intentions and you face the morass of miscommunication, misplaced expectations and skyrocketing costs.

If that doesn't give you pause, perhaps this will. Getting started is the hardest, most brain-numbing exercise and the most important of them all.

But many say every project, no matter how enormous or many-tentacled, can be sliced and diced into manageable pieces.

Just ask Dennis Schroff, director of the accounting systems division of the government's General Services Administration (GSA). Faced with the task of overhauling the GSA's legacy systems, which accounts for 80% of all computer systems in the agency, Schroff called in Trout's JAD and RAD expertise.

Trout's first step? She did her homework, thoroughly exploring how people do their jobs.

That homework helps imbue the effort with the cache of credibility, Trout says.

Next came the series of sessions to delineate the GSA's goals, namely to become more responsive to the public, users and itself, and how to determine success.

In fact the GSA, along with James Martin, has defined 17 related projects and the order in which they should be done. A steering committee — composed of the Top 23 executives who fund the GSA's move to client/server — read, responded to and approved each phase that Trout's team recommended. And that means that the GSA as a whole is now committed to its long-term re-engineering effort.

"Now we are able to take our experiences and apply it to different parts of the agency," Schroff says.

This last thought is key. The first project in any large undertaking provides the referential experience needed to create accurate time and cost estimates for the related tasks.

Dave Gammell, manager of development support at Entex, Inc., knew that instinctively. For years, Gammell had been training his Houston-based development staff on the ins and outs of client/server technology to make the natural gas distribution company a more nimble responder to customer demands. But he also knew they didn't have the experience needed to change to a more complex architecture. So he called in Andersen Consulting.

Using JAD sessions to find the first order of business, Andersen and Entex focused on a system that would let Houston customers pay their gas bills in person. And because users would be the man and woman off the street, the application had to be graphical and simple to use.

At the back end, Gammell wanted to replace the old batch-oriented CICS system with a database that would record customer payments as they occured. In its first year of operation, the resulting Entex Cashier System took in $20 million in customer payments.

"The whole idea was to get the direct experience we would need to anticipate the costs and requirements of future projects," Gammell says.

Such training included the art of running JAD sessions, the science of creating fast prototypes and the use of Andersen's suite of computer-aided software engineering tools.

Today, Gammell is convinced that his Entex team can extend client/server throughout the company.

Sometimes the technology foundation of a project is so new that the project becomes a learning experience for even the trained consultant. That's been the case for KPMG Peat Marwick's Mobile Solutions Practice in Radnor, Pa.

Brought in by Apple Computer, Inc. as part of the U.S. Army's $2 million ProMed contract, KPMG has been working with physicians at Walter Reed Army Medical Center in Washington; Wright-Patterson USAF Medical Center in Dayton, Ohio; and Brooke Army Medical Center in San Antonio, Texas.

The idea is simple: Give physicians patient care information on a handheld device — in this case the Apple Newton. The execution is breathtakingly complex. It involves wireless communications and eventual access to the Department of Defense's (DOD) vast Composite HealthCare System. Throw in a test group of vascular surgeons, gynecologists and nurses — all with varying needs — and you get some sense of scale.

Now in its third prototype stage, the ProMed application comprises nearly 500 screens, with access to hospital labs, X-ray departments and pharmacies. Doctors and nurses can enter patient information, query test results and see recent patient histories.

Today, the Newton ProMed application connects to a Unix server housed in Fort Dietrick, Md., which in turn integrates with the DOD's central information backbone. The system is expected to go wireless within two months.

Is Dr. Jeffrey Roller, head of Wright-Patterson's obstetrics/gynecology department, disappointed that the project hasn't moved with the speed he envisioned? A little, but he says he now has a more realistic view on any follow-up projects.

"I think we have to prove to whomever ultimately commits more dollars that the idea of a portable physician's system warrants further pursuit," Roller says. "And I think ProMed will give that proof. For me, that makes this whole effort a success." ■

Garner is a free-lance writer in San Carlos, Calif.

FIRST THINGS FIRST

When you start your first JAD session, show you've done your research:

1. **Look up what people do.**
2. **Put that information in bulleted charts.**
3. **Verify job descriptions with employees.**
4. **Prioritize their responsibilities.**

Source: Peggy Trout, principal consultant at RAD pioneer James Martin Co., Reston, Va.

WHY JAD?

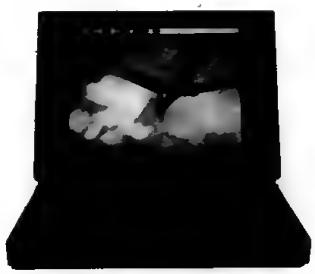
The idea behind JAD is to eliminate poor communication, and keep your project from going bad. Consider this nightmare painted by the numbers:

95% of all IS projects slide into cost and time overruns.

65% of those become runaways, racing two to three times over budget and over duration.

93% of all runaway projects stem from poor communication.

Source: Arnie Finkelstein, senior manager of KPMG's Runaway Systems Management Group, Dallas



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Foolproof

Wising up to the contract management game

Want to survive the outsourced, "buy-not-make" '90s? Then sharpen your contract management skills. Here's how.

By Leslie Goff

Lisa Kelly fears she may have some tough talks coming up this spring when she negotiates the renewal of a contract for a critical software migration tool.

Only a handful of vendors supply the type of product her company needs to downsize major applications from an IBM mainframe to a Hewlett-Packard HP 9000 series midrange computer, the controller for Wayne, N.J.-based Union Camp Corp.'s corporate information systems group says.

"Those few vendors have an advantage over users," she says. The software supplier Union Camp chose to provide the tool negotiated a "very complicated licensing agreement — they weren't flexible at all, and I think we could have saved as much as 25% if we had been in a position to negotiate better terms instead of having to go along with the vendor."

With IS costs under close scrutiny, the ability to closely manage procurement and contracts has become an invaluable skill.

"Those who have spent more energy looking at the IT procurement process have found substantial savings," says Claude Marais, director of business consulting and processing services in the information services group of Elf Atochem North America, Inc. in Philadelphia.

Marais estimates that by proactively managing contracts, IS can save as much as 20% to 50% in acquisitions costs. He is chairman of the Society for Information Management (SIM) International's information technology procurement working groups, which formed last January to explore techniques and tools that IS professionals can use to improve their procurement processes and contract management skills.

"I started this because we realized that many professionals are involved in the process and they do not share information," Marais says.

"This whole SIM group has the purpose of bringing those people together and sharing information. Cross-functional interaction is what we find to be extremely valuable," he says.

A variety of courses are available to IS professionals that deal with how to negotiate contracts, how to work with corporate counsel, how to maintain good vendor relations and other related issues (see chart).

Contract Management Resources

American Management Association
135 West 50th St.
New York, N.Y. 10020-1201
(518) 891-0065 (course registration)
(212) 903-8270, (membership department)
SERVICES: Offers seven two- to three-day seminars related to contract/purchasing management.
REQUIREMENTS: NA.
COST: Varies by seminar depending on member or non-member status. Team discounts are available. Individual membership dues are $160/year; "Corporate" and "Growing Company" memberships are also available.

Center for Management Development
Boston University
Metropolitan College Corporate Education Center
72 Tyng Road
Tyngsboro, Mass. 01879
(508) 649-4200
SERVICES: Offers two workshops related to contract management covering such topics as how to develop effective vendor relationships, contracts, ethics, purchasing requirements, principles and concepts, how to prepare for negotiations, how to handle an aggressive negotiator and how to construct realistic agreements.
REQUIREMENTS: NA.
COST: $695 for each two-day workshop, corporate discounts are available to organizations sending three or more registrants.

Data Processing Managers Association
505 Busse Hwy.
Park Ridge, Ill. 60068
(708) 825-8124
Contact: Jan Malackis, ext. 236, or Barbara Meade, ext. 235.
SERVICES: Offers a 10% discount to members on courses offered by the American Management Association (see listing above).
REQUIREMENTS: Must be a member of the DPMA; membership open to anyone in IS field.
COST: See above, membership dues vary from chapter to chapter and average about $100/year.

Financial Management for Data Processing
P.O. Box 27543
San Francisco, Calif. 94127
(415) 731-3706
Contact: Terrance Quinlan, president and director.
SERVICES: Annual conference (IS in Transition: Financial Management to Meet the Challenge, May 11-13, MGM Grand, Las Vegas) will include sessions on contract management and will feature IS contract management specialist Joe Auer as keynote speaker. Members include IS professionals responsible for contract negotiation and management, including financial planners, controllers, cost analysts and purchasing managers.
REQUIREMENTS: Must be a member.
COST: $50/year for annual individual membership, $300/year for corporate membership (allows unlimited number of members to join).

International Computer Negotiations
P.O. Drawer 2970
Winter Park, Fla. 32789
(407) 740-0700
SERVICES: Training vendor provides public seminars as well as customized on-site workshops aimed at teams of IS managers, procurement managers, contract negotiators, financial officers and others involved in IS contracts.
REQUIREMENTS: NA.
COST: $1,295 for three-day workshops; $545 for one-day workshop.

Omicron
115 Route 46, Suite D-31
Mountain Lakes, N.J. 07046
(201) 335-0240
Contact: Jim Webber, president and executive director.
SERVICES: Sponsors periodic "Interchanges" — facilitated roundtable discussions among members on issues related to IS contract management.
REQUIREMENTS: Attendees' company must be an Omicron member; members must be located in the New York or Chicago metropolitan areas.
COST: $8,500/year and up depending on services subscribed to by the member.

Society for Information Management International
401 North Michigan Ave.
Chicago, Ill. 60611-4267
Contact: Lisa Paulsen, chapter programs coordinator, (312) 644-6610, ext. 3775.
SERVICES: Sponsors information technology procurement working groups, including subgroups studying international procurement, contracting and procurement process management.
REQUIREMENTS: Must be a SIM member. Contact Claude Marais, (215) 419-7164, for more information.
COST: $1,200/year (academic) or $2,000/year (corporate) for Institutional Membership; $125/year (academic) or $250/year (corporate) for Individual Membership; $62.50/year plus local chapter fees (academic) or $125/year plus local chapter fees (corporate) for Chapter Membership. No extra fees for participation in working group except for such direct costs to the group as speakers' fees or expenses.

AACE International (The Association for Total Cost Management)
209 Prairie Ave., #100
Morgantown, W. Va.
Contact: Pam Bradlese, (800) 858-COST
SERVICES: Offers one- and two-day industry-specific training sessions covering all aspects of contract management. Open to IS and other professionals. Industries covered include construction, chemical, transportation, environmental, health care and government.
REQUIREMENTS: NA.
COST: Seminar fees range from $350 to $850 depending on membership status, location of seminar and the number of days attending.

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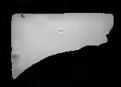


BOB FISHER

Intelligence Files

IS investment payback

Investments in information technology have dramatic payoffs for economic growth and productivity.

That is the finding in a new study by the University of California at Irvine, which compared 11 Asian-Pacific countries on investments in information technology and growth in productivity and gross domestic product. The study found that countries that increased their information systems investments in relation to investments in plant and equipment have shown the fastest growth in productivity.

The study also found that government can play a large role in encouraging IS investments. The level of government investment was related to the quality of its information infrastructure, including the number of computer professionals and the quality of the telecommunications network.

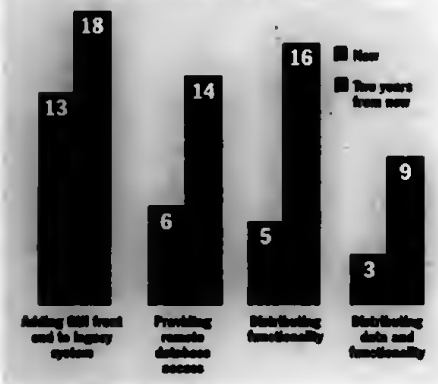
Source: Ken Kraemer, director of the Center for Research on Information Technology and Organizations, University of California at Irvine, Graduate School of Management.

Distributed world still a ways off

The number of applications running on some form of client/server platform is expected to double this year, according to a recent Deloitte & Touche study. But a fully distributed world is still a ways off. By 1996, the consultancy says only about 9% of all applications will feature distributed data and functionality, up from a mere 3%.

While their plans for 1996 are ambitious, most large companies are still only doing the most basic type of distributed computing: a graphical interface linked to a legacy system

PERCENT OF APPLICATIONS RUNNING ON THE MODEL



Source: Deloitte & Touche, Wilton, Conn., Sixth annual survey of 400 North American CIOs

Losing shelf life

The country's leading grocery products manufacturers say the industry's information technology is rapidly losing its shelf life — becoming obsolete and not serving customers' needs.

That is the finding in a survey of 42 chief information officers at organizations that represent $200 billion (more than half) of domestic industry revenue. The survey was conducted for the Grocery Manufacturers of America.

According to the survey, too much of the industry's information technology is internally focused and has no direct value to customers.

In addition, much of the infrastructure is 10 to 20 years old, has been "modified and patched several times" and would be extremely expensive to replace.

This has made investing in new technologies and transitioning from legacy systems major concerns for the industry, not only among CIOs but also with chief executive officers.

"The survey shows clearly that grocery manufacturers must move quickly to get their information technology house in order so they can deal effectively with issues such as changing customer needs, increasing customer demands, global competition and industry overcapacity," says Richard L. Miskewicz, the principal at A. T. Kearney, Inc. who conducted the survey.

Other findings from the survey included:

- Most CIOs said they control less than half of their company's IS resources, making it difficult to set strategic goals and priorities.
- Even though electronic data interchange was viewed as a critical link to creating successful partnerships with customers, vendors and service providers, its use is still very limited.
- The lack of industry IS standards makes it difficult for manufacturers to handle "custom" requests from customers, which are increasing in both number and sophistication.
- The industry must radically reengineer business processes to be more customer-driven, and IS will play a critical role in that effort. IS management must prioritize action and investment toward the reengineered business processes.

Source: Survey of grocery products manufacturer chief information officers by A. T. Kearney, Inc. in Chicago.

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Michael Bloomberg, Bloomberg Financial Markets:
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Calendar

Busy week for conferences

If you're looking for a good management-oriented conference in the next few weeks, you'll find no shortage of them the week of May 8-14.

Conferences planned for that week include the following:

The National Center for Manufacturing Sciences is hosting "Meeting the Global Challenge '94" meeting and conference May 8-10 in Ann Arbor, Mich.; for information call (313) 995-0300.

The Association for Systems Management will hold its Annual Information Systems Conference May 8-11 in Orlando, Fla.; for information call (216) 243-6900.

Also taking place May 8-11 is the Conference on Interactive Marketing/East in Los Angeles, which will focus on interactive television, advertising, cable networks and video games. For information call (310) 473-4147.

On May 9, Meta Group, Inc. will host Services and Systems Management Strategies in Reston, Va.; for information call (203) 226-6382. The focus will be on networking, distributed computing and outsourcing at the Decision Support Center 1994 Conference in Naples, Fla., May 10-13; for more information call (203) 656-1500.

May 11-13, the Financial Management for Data Processing Association will hold its National Conference in Las Vegas. For information call (415) 731-3706.

And on May 12 three conferences will open, including the 1994 Financial Services Technology Conference May 12-13 in Boston; for information call (617) 235-5777. The Conference Board's Delighting Internal Customers Conference will be held May 12-13 in San Diego; for information call (212) 339-0290.

Also beginning May 12, Management Roundtable, Inc. will host "The Profitable, Customer-Driven Organization: Developing the Blueprint" May 12-13 in Cambridge, Mass. For details call (617) 232-8080.

MAY 1-7

Fifth Annual Rexx Symposium. Boston, May 1-4 — Mike Cowlishaw, author of the Rexx language, will speak along with the implementors for Rexx versions on DOS, OS/2, Unix and all IBM systems. Contact: Cathie Dager, Stanford Linear Accelerator Center, Stanford, Calif. (415) 926-2904.

Business Forms Management Association Symposium. Ottawa, May 1-5 — Presentations will feature John Landry, senior vice president of software development at Lotus Development Corp., and Keith Davidson, executive director at Xplor International. Contact: Business Forms Management Association, Inc., Portland, Ore. (503) 227-3393.

Pen & Portable Computing Conference & Exposition. Boston, May 2-5 — Focus: Exploring portable computing, mobile connectivity and pen technology. Sponsored by Boston University's Metropolitan College Center for Information Technology. Contact: Pen & Portable Computing, Tyngsboro, Mass. (508) 649-4200, Ext. 255.

First Annual PowerOpen Conference. Boston, May 3-4 — Contact: PowerOpen Association, Burlington, Mass. (617) 273-1550, Ext. 7107.

Midrange Expo. Boston, May 3-4 — Contact: National Productions, Inc., Salem, Mass. (508) 745-6010.

CUMREC/CAUSE Workshop. Columbus, Ohio, May 4-5 — Sponsors: CUMREC is the College and University Computer Users Association, and CAUSE is the association for managing and using information technology in higher education. Contact: CAUSE, Boulder, Colo. (303) 449-4430.

Spring 1994 Electronic Imaging Seminars of Choice. Los Angeles, May 4-5 — Contact: Cohasset Associates, Inc., Chicago, Ill. (312) 527-1550.

Electronic Data Interchange '94. Orlando, Fla., May 4-6 — Contact: Data Interchange Standards Association, Inc., Alexandria, Va. (703) 548-7005.

1994 Spring Congress. San Francisco, May 4-7 — Theme: "Medical Information and Record Systems Integration at the Enterprise and Individual Levels." Contact: American Medical Informatics Association, Bethesda, Md. (301) 657-1291.

1994 Computer Law Update. Washington, May 5-6 — Contact: Computer Law Association, Fairfax, Va. (703) 560-7747.

DECUS '94. New Orleans, May 7-12 — Focus will be on "Managing Complexity: Succeeding in a Multivendor, Multiplatform World." Contact: Digital Equipment Computer Users Society (DECUS), Shrewsbury, Mass. (508) 841-7166.

MAY 8-14

Meeting The Global Challenge. Anaheim, Calif., May 8-10 — Contact: Beth Bolog, National Center for Manufacturing Sciences, Ann Arbor, Mich. (313) 995-7962.

Conference On Interactive Marketing/East. Orlando, Fla., May 8-11 — This conference will specifically cover interactive TV. Focus: Anatomy of an interactive deal, interactive telephone, online services, interactive advertising, video games, new interactive cable networks and more. Contact: Interactive Marketing, Inc., Los Angeles, Calif. (310) 473-4147.

Enterprise PC. Carlsbad, Calif., May 8-11 — Focus: "Desktop Strategies for the 90s." Contact: Technologic Partners, New York, N.Y. (800) 869-6963.

'94 Masters Conference. Atlanta, May 8-13 — Contact: Structured Solutions, Atlanta, Ga. (404) 618-7900.

1994 Micro Focus Conference. San Francisco, May 9-13 — Contact: Micro Focus User Conference Headquarters, Palo Alto, Calif. (415) 496-7356.

Technology From Russia '94 Conference and Exposition. Washington, May 10-12 — Contact: J. Spargo & Associates, Inc., Fairfax, Va. (703) 631-6200.

Decision Support Center 1994 Conference. Naples, Fla., May 10-13 — Focus will be on track sessions, data center, network, applications, distributed computing, outsourcing and quality/value. Contact: Real Decisions, Darien, Conn. (203) 656-1500.

BBUG '94. Chicago, May 11-13 — Contact: Boole & Babbage, Inc., San Jose, Calif. (408) 526-3000.

Re-engineering/Hammer Forum & Clinic 94. Boston, May 11-13 — Focus: "Large-scale re-engineering: Reinventing the Entire Enterprise." A landmark conference on the next wave of re-engineering. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

1994 Internal Customer Satisfaction Conference. San Diego, May 12-13 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0345.

No Boundaries — The Global Connection. Orlando, Fla., May 13-15 — Contact: Sharyl Bradley-Hennard, The Society of Telecommunications Consultants, Boca Raton, Fla. (407) 852-7071.

MAY 15-21

EIS/94 Agenda. Rockville, Md., May 15-18 — The EIS/94 program stresses information technology in action. Contact: Emergency Information Systems International-EIS/94 Conference Registrar, Rockville, Md. (301) 739-6900.

Electronic Data Processing Association Conference '94. Gold Coast, Australia, May 16-20 — Contact: Sara S. Patterson, The EDP Auditors Association, Inc., Rolling Meadows, Ill. (708) 253-1545.

The Seventh International Software Quality Week Conference. San Francisco, May 17-20 — Software Quality Week focuses on advances in software test technology, quality control, risk management, software safety and test automation. Contact: Software Research, Inc., San Francisco, Calif. (415) 957-1441.

Government Technology Conference. Sacramento, Calif., May 18-19 — Topic tracks at this year's event are results-oriented government, enterprising government, customer service enablers, leveraging technology, emerging technologies and networks. Contact: Deborah Furlow, Government Technology Conference, Sacramento, Calif. (916) 363-5000.

Object Technology and Management & Designing Object-oriented Libraries: The Art & the Science. Chicago, May 19-20 — Speaker will be Bertrand Meyer, president of Interactive Software Engineering, Inc. (ISE) in Santa Barbara, Calif., a major supplier of object-oriented environments, tools and libraries. Contact: ISE, Goleta, Calif. (805) 685-1006.

Executive Track

John W. Harper, senior vice president of information services at **USAir Group** in Arlington, Va., has been promoted to senior vice president of finance and chief financial officer. The information systems function will continue to report to Harper in his new role. He has been the airline's top IS executive since 1992. Harper will report to Frank Salizzoni, newly appointed president and chief operating officer of USAir Group. Harper joined USAir in 1991 as vice president and controller. He was previously with Axe-Houghton Management and had financial management responsibilities at TWA.

ITT Hartford Insurance Group in Hartford, Conn., a wholly owned subsidiary of ITT Corp., has announced the promotion of **John T. Crawford**, 52, to senior vice president. Crawford oversees ITT Hartford's information management division where he previously served as vice president of information management.

Crawford started at ITT in 1980 as deputy director of data processing systems. Prior to joining ITT he was vice president of data processing and administrative services at Horace Mann Insurance Co. in Springfield, Ill.

Conrail, Inc. in Philadelphia has announced the appointment of **Albert M. Polinsky**, 47, to vice president of IS. He succeeds **Robert O. Wagner**, who is retiring. Polinsky will report to H. William Brown, senior vice president of finance and administration. Polinsky has spent much of his Conrail career in the marketing department. He was appointed assistant vice president of marketing services in 1992, and most recently he served as assistant vice president of program management.

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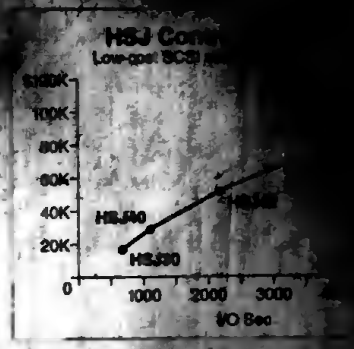

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The CW Guide to Legacy Data Access

new tools to capture old data

Legacy data is a blessing as well as a curse.

Digging through musty old flat-file and nonrelational data structures is no picnic. But the company that does it well can build consolidated customer views, find patterns and otherwise hunt for advantages in the ever-more-competitive business world.

Although legacy data access has been addressed for some time with tools such as fourth-generation query languages and report writers, new technologies have been developed that make it possible to make better and faster decisions using corporate data.

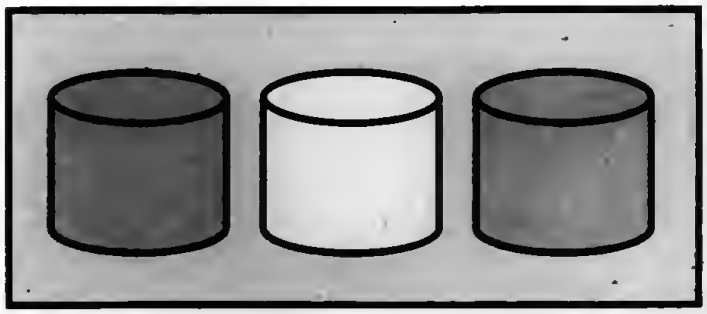
Vendors have flooded the market with data access tools of all types — personal databases, new report writers, SQL translators, ad hoc query tools. But there is still no silver bullet.

In our Buyers' Satisfaction Scorecard, more than 200 users were surveyed to evaluate databases used as end-user data access tools. Users found **Microsoft Corp.'s FoxPro** and **Access**, **Borland International, Inc.'s Paradox for Windows** and **Lotus Development Corp.'s Approach** lacking in ease of use and speed. Users also found cost and support less satisfactory for middleware products from **IBM, Oracle Corp.** and **Gupta Corp.** Firing Line users found **Cross Access Corp.**'s new middleware product slow but effective.

These products are aimed at user demands to access mainframe data from their workstations. Most organizations spread data over multiple types of databases and hosts, creating a need for heterogeneous database access.

There are at least three options for giving end users the type of legacy data access that will empower the organization with better and faster decision support.

- The first — and in most cases, least expensive — option is to provide direct end-user access to legacy databases. This can be achieved using traditional 4GL tools as well as some new end-user client/server technologies.
- Second, legacy data can be staged in an intermediate, flexible database so that end users can indirectly access it without burdening the legacy host.
- Third, new client/server applications may be developed that directly or indirectly access the legacy data.



Bruce Harreld
Computerworld Reader
Since 1985
President, Boston Chicken

In the information market, this much is clear: Vendors make the products. IS managers make the decisions.

As problems go, the one facing Boston Chicken was the kind we'd all like to have: they were growing too darn fast. So much so that their field offices were having trouble keeping up-to-date with their support center. After much burning of the midnight oil, they realized they needed a simple, effective software package to both keep track of and plan their meteoric rise. One thing was clear—they were at a definite crossroads.

After an intense period of searching and evaluation, Lotus Notes came to roost. Now the folks at Boston Chicken can access, track, share and organize business information in ways they never thought possible. In fact, it's worked out so well, Boston Chicken plans to implement the market-leading Notes in some 30 field offices before the end of the year. So now you not only know why the chicken crossed the road. You also know how.

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Navigating the legacy quagmire

Information systems can get caught between a rock and a hard place when working with old databases

By Mark Crego

Users are reading about — and demanding — flexible new access tools. Unfortunately, those tools often work well only with relational data, and the majority of legacy business data is in either flat-file or nonrelational data storage.

Other complications also exist. Legacy data is usually on the mainframe, but users want to work on their PCs. Legacy applications are usually character-based, yet most PC users have graphical user interfaces such as Windows. Most large businesses have multiple hosts and database types, which rules out any single database fourth-generation language (4GL) as an acceptable solution.

The simplistic answer to these disconnects of technology is to toss the old database in the dumpster and start anew. But for a variety of obvious reasons — security, budgets, data translation and so on — most businesses cannot go that route. Legacy data will be around for a long time.

So information systems is charged with building a clear road map and architecture to support legacy data access. Haphazardly buying a query tool without planning how it will be used is a stopgap measure at best. Long term, business users will not be satisfied with the results.

The diagram on this page breaks down legacy data access into three stages as data moves from the database to the user. In addition, two categories of products can be used to ensure that the data is in useful form when it arrives at the desktop.

■ At the top of the model is the *database layer*, which provides the access to the database. A database can be anything from a simple flat-file implementation to a complex multiple distributed implementation. Countless companies still have vital data squirreled away in VSAM, IMS and other older databases.

The database layer can also include staged databases. Many IS organizations are providing indirect access to legacy data by building and maintaining an intermediate query database — often those from Oracle Corp., Informix Corp. or Sybase, Inc. Users run queries against these databases, which are more agreeable with front-end tools than older relational database management systems.

There are two drawbacks to implementing an intermediate database. One is synchronization and making sure that changes to the source database are reflected in the staged database in a timely manner. Flexible access to outdated information is nothing to brag about. The second is the cost of additional RDBMS software and additional storage hardware.

Still, the benefits are considerable. In addition to providing SQL access, IS can build the staged database from scratch, which provides an opportunity to label fields more clearly and ensure that the data is structured logically.

■ Next is the *data access layer*, which translates end-user and programmed requests into the type of access required by legacy and new databases. Access layers range from single database/host access to multiple host/database-type access. The access layer can be called middleware because it resides in between the presentation to the user and the databases.

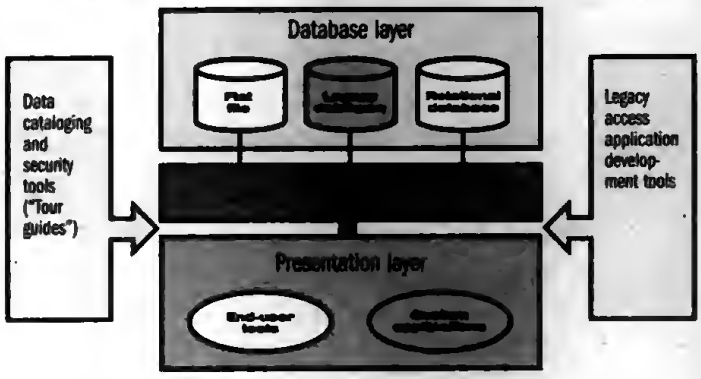
When access to the data occurs on the same host where the data resides, and where the data is in only one type of database format, the middleware access layer is simple, usually consisting of the 4GL or query tool provided by the database vendor.

Where access is either through a client/server setup or across several hosts and database formats, a more complicated middleware component is required, such as Cross Access Corp.'s namesake product, Information Builders, Inc.'s Enterprise Data Access (EDA)/SQL, Computer Associates International, Inc.'s Visual Access Server or Sybase's Micro Decision-ware Database Gateway. One approach that is gaining momentum is to position the middleware component on intermediate hardware so that access is more optimized and flexible, such as with Digital Equipment Corp.'s AccessWorks.

■ At the bottom of the model is the *presentation layer*, which consists of all the technology the user sees to access legacy data.

There are two types of applications that present data to the user. One type is end-user access tools — 4GLs, query tools, executive in-

A model for legacy data access



The departments that most need improved access to corporate data are accounting/finance, marketing and customer service, according to International Data Corp.

data access problem solvers

Mallinckrodt Medical, Inc.

An imaging products group for St. Louis-based medical equipment manufacturer

Mission

Provide access to AS/400 data for 450 PC and terminal users. Data often rekeyed from AS/400 reports into spreadsheets and Lotus Notes.

Product

Wall Data, Inc.'s Rumba middleware. Eliminates several layers of connectivity and access software through direct support for IBM's Distributed Relational Database Architecture.

Challenges

Rumba requires some programming but solves the company's biggest problem of providing an ad hoc query capability for both PC and terminal users. Other evaluated products lacked ODBC support or required additional connectivity software, according to Ron Zika, a systems integrator at the company.

Miles, Inc.

Credit group of a Pittsburgh-based diversified pharmaceuticals company

Mission

Connect Macintosh clients to IMS, DB2 and Oracle data on mainframe and Digital VAX.

Products

Digital Communications Associates, Inc.'s MacMainFrame for 3270 emulation; Apple Computer, Inc.'s Data Access Language for IMS and Oracle database access and updating; Mitem Corp.'s MitemView for multiple-session asynchronous mainframe access.

Challenge

IMS data (created by another department) does not map directly to the relational table format used in queries. "You might ask for a customer's name and get the name, street address and ZIP code all in a big lump but not get the city," says Don Campbell, director of credit. To solve the problem, the organization staged the IMS data on the Oracle database.

U.S. House of Representatives

Washington

Mission

Provide PC and Macintosh access to Member Information Network, a series of 80 logically separate Software AG, Inc.'s Adabas and Stair databases running under MVS on an IBM ES/9000 mainframe.

Products

Data staged on Sybase intermediate database, with access applications rewritten using JYACC, Inc.'s JAM and JAM/DBI; Revelation Technologies, Inc.'s Advanced Revelation database for DOS; and ACI US, Inc.'s 4th Dimension database for Macintosh.

Challenges

Immaturity of client/server technology. "The front-end tools often didn't work with the back-end tools," says Jim Daley, database administrator. The House is also waiting for broader platform support, particularly JAM for Macintosh.

formation systems and report-writer products that give users flexible access to their data. The second type is programmed access, which includes all custom-built applications. Strong tools in the end-user access layer include solutions from Cognos Corp. and Sapiens USA, Inc., which recently acquired client/server tool vendor SmartStar Corp.

Both types of access are important. End-user access is necessary to empower users to make quick decisions as well as for rapid development and prototyping. Ultimately, however, standing applications should be developed to provide faster and more reliable access for the updating and management of legacy data.

Two other types of tools are also useful for increasing the accessibility of legacy data.

■ *Development tools* aid in the development of applications designed for legacy access. Examples include high-end solutions from Progress Software, Inc., Powersoft Corp., Cognos and Easel Corp.; and low-end ones from Microsoft Corp. (Access, FoxPro) and Borland International, Inc.

■ *Cataloging and security tools* are essentially a tour guide. Users who have installed end-user computing and access tools have to beware of incorrect interpretations of poorly labeled data. For example, think of a company that produces weekly, biweekly and monthly billing statements. It is not much of a stretch to imagine a busy executive drawing the wrong conclusions or making bad decisions because he is analyzing and comparing the wrong runs.

Cataloging tools provide road maps and rules to legacy data access so users can better identify and interpret data and the data can preserve integrity. One way they do this is by translating obscure database field names and other relevant terms into plain English.

This tool category should help make it clear that end-user query tools do not enable IS to throw out the programming department. Guiding users through legacy data so it is meaningful to them requires a lot of planning and programming.

Don't leave users blind

Guided data access is good; direct, unguided access is dangerous. IS organizations that choose to implement an intermediate database between users and legacy databases may find there is less need for this tour guide function, but the additional synchronization issues should keep everyone busy.

Unfortunately — but not surprisingly — it would be easy to buy a tool for each layer of the model and still not have anything close to a working solution.

Anytime multiple vendors' products must cooperate to provide complete end-user solutions, there is a need for strong compliance to standards, and such compliance must be clearly tested in a production IS setting.

Standards are most important where the presentation and access layers interface. Two such standards have emerged. One is SQL or relational access standard, which is the access approach embodied by Information Builders' EDA/SQL and others. The other is Microsoft's Open Database Connectivity (ODBC) standard, which is embodied by Microsoft's Visual Access, CA's Visual Express and Q+E Software, Inc.'s Q+E.

ODBC is basically a subset of SQL. ODBC-based tools are often less expensive and easier to use, but they may lack the full robustness of a SQL implementation.

Caution required

The right choice of legacy data access tools depends upon the nature of the legacy data and the kind of access desired. If there are very few database types and they are located on one host, and if access to the legacy data is acceptable on that host, then host-based query languages such as CA's Easytrieve, Information Builders' Focus and SAS Institute, Inc.'s products are acceptable.

If, however, the databases are distributed, client/server access is required; and/or if there is a need for development growth of the application, then a more complex solution, including a strong access layer and cataloging/security tools, should be sought.

Some vendors provide comprehensive solutions in all these areas. SAS utilizes and installs several middleware solutions to provide most types of access to legacy data. IBM has based its Information Warehouse framework on EDA/SQL. CA's Visual Express product line provides ODBC-compliant servers and a tightly coupled graphical front end. A catalog in Cognos' Impromptu helps navigate through legacy data.

Legacy data access vendors such as Sybase, Cognos, Information Builders and others are experiencing strong growth, mostly due to customers' need to gain flexible access to data resources.

Empowering users with access to data can be a win for users and IS, provided it is seamless, accurate, reliable and meaningful. The bottom line is that quality access *is* possible today. However, it will be achieved only as a strong partnership among users, IS and vendors of legacy data access tools. ■

Crego is a partner at Legacy Solutions in Springfield, Va.

Representative tools

Middleware

These middleware tools connect or translate end-user requests to legacy databases. The list is not comprehensive by any means; it is intended to illustrate the breadth of choices available. Pricing can reach $400,000 and beyond for some database gateways.

PRODUCT COMPANY	DESCRIPTION	HOST	COMPATIBILITY
	Servers for Visual Express	MVS	IDMS, Datacom, DB2, SQL/DS, IMS, other
	Uniform relational view of enterprise data. Interpretive data access.	OS/2, VMS, Unix, MVS, VSE	50 different sources
	Uniform relational view of enterprise data. Precompiled data access.	OS/2, VMS, Unix, MVS	DB2, IMS, VSAM, Focus, IDMS, other
	VMS-based, multihost access server	VMS	Any SQL database, VSAM, EDA/SQL
	Middleware development tool	Unix	Oracle, Sybase, Informix
	Transparent SQL connectivity	VMS, Unix, NetWare	SQL
	Database gateway	MVS	ODBC
	Drivers for ODBC applications; interfaces with spreadsheets	DOS	ODBC, SQL
	Allows development of SQL and ODBC interfaces to non-SQL databases	VMS, Unix, Windows NT, Macintosh, other	Any non-SQL database

Presentation tools

The following examples should give an idea of the many different classes of presentation tools. Prices range from less than $200 for a report-writer to $25,000 or more for a full-scale EIS system such as Nomad.

PRODUCT COMPANY	DESCRIPTION	HOST	COMPATIBILITY
PowerPlay Cognos Corp.	EIS	Windows	None
Commander Comshare, Inc.	EIS	DOS, Macintosh, OS/2	SQL
Nomad Must Software International	Client/server EIS	MVS and Windows	Direct database access
LightShip Pilot Software, Inc.	EIS	Windows	Dynamic Data Exchange sources
Forest & Trees Trinzic Corp.	Business summary access tool	DOS, Windows	Direct database access
CA Easytrieve Computer Associates	Query language	MVS, Windows	Direct database access
Focus Information Builders, Inc.	Query language	MVS, VMS	Direct database access
DB Integrator Digital Equipment Corp.	Multiple SQL-based query language	VMS	SQL, DSM
Super Natural Software AG	Query language, report-writer	MVS, VMS, Windows (client)	Adabas
Global View Global Software, Inc.	Query/report-writer for MVS	MVS, CICS	VSAM, DB2, IMS-DB, other
Visual Express Computer Associates	Multidatabase query interface	Windows	ODBC
Starware Plus Novell, Inc.	Menu-driven query system and report-writer	DOS, OS/2	None
SQL*Plus Oracle Corp.	4GL interactive command utility	VM, MVS, DOS, Unix, VMS, DG	SQL
SAS SAS Institute, Inc.	Query system and report-writer	VMS, Unix, Windows, MVS	Direct database access, EDA/SQL, AccessWorks
Quest Gupta Corp.	End-user query tool	Windows	SQL
Impromptu Cognos Corp.	End-user query and reporting interface	Windows	ODBC, SQL
Event and Center Must Software	Reporting interface	Windows	SQL

BUYERS SATISFACTION SCORECARD

Buyers' Satisfaction Scorecard: FoxPro nets highest ratings

By Michael Sullivan-Trainor

The only similarity products in the data access tools category have is that they allow information systems organizations and end users to collect data from one database and integrate it with data from another. How that is accomplished is up to the individual organization and application. Off-the-shelf products in this category follow a wide variety of designs to carry out this mission.

End-user tools are driven by Microsoft Corp.'s Open Database Connectivity standard and Borland International, Inc.'s Integrated Database Application Programming Interface, which are embodied in PC databases and programming tools.

Ease of use most important

Among the market-leading packages in this category, Microsoft's FoxPro for Windows garnered the highest satisfaction ratings from users surveyed for the Buyers' Satisfaction Scorecard.

Taking top ratings in the six most important categories to users, FoxPro scored ahead of Microsoft's Access and Borland's Paradox for Windows, which tied. Lotus Development Corp.'s Approach received the lowest satisfaction ratings in all categories as well as the lowest overall rating.

Unlike past ratings of PC databases, this Scorecard looked at the products only with regard to their use as data access tools. Forty FoxPro users responded to the survey. Fifty users were polled for Access and Paradox each, and 35 users were included in the Approach results. The users were asked to rate only their own products.

The majority of users employed the tools as front ends for the following databases: IBM's DB2 or SQL/DS, Software AG of North America, Inc.'s Adabas, Oracle Corp.'s Oracle, Sybase, Inc.'s Sybase or Digital Equipment Corp.'s Rdb.

Overall, users rated the products high in integration and flexibility of data access features, but low in ease of use for data access and performance.

Increasingly, PC software vendors are aiming their databases at end-user data access applications [CW, April 4]. New versions will offer greater ease of use for this purpose. Access 2.0 is set to be delivered by month's end. Paradox for Windows' user-friendly version is due this summer, and Version 3.0 of Approach is also slated for summer availability.

In a separate International Data Corp. study of 200 IS professionals conducted last fall, more than 70% of the respondents said their organizations are focused on improving end-user data access as a major component of corporate strategy or to improve corporate performance.

These professionals cited Microsoft and IBM as the leading vendors doing the best job at helping users meet information access requirements. Microsoft's strengths are through end-user products such as FoxPro and Access, while IBM provides more traditional middleware tools.

Sophisticated functions

Users of IBM's Distributed Database Connectivity Services were included in another part of this Buyers' Satisfaction Scorecard survey, which asked users about SQL gateways from leading vendors. These middleware products provide a more sophisticated set of data access functions rather than just supply a front end to users.

Leaders in this category include: Information Builders, Inc., IBM, Oracle, Sybase and Gupta Corp. Providing translations through SQL, these vendors offer a variety of gateways to access common relational database management systems such as Oracle, Sybase, Ingres, Informix and DB2.

More than 50 users of SQL gateways rated reliability, performance, value and ease of client/server installation as the most important categories for the product area.

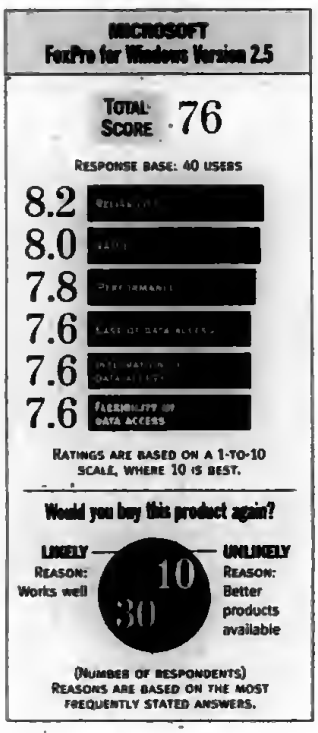
Like end-user databases, gateways received high satisfaction marks for reliability. The variety of databases supported and ease of installation on the mainframe also scored well (6.9 to 7.0). Low ratings were given for acquisition and maintenance costs (6.2) and technical support (6.5).

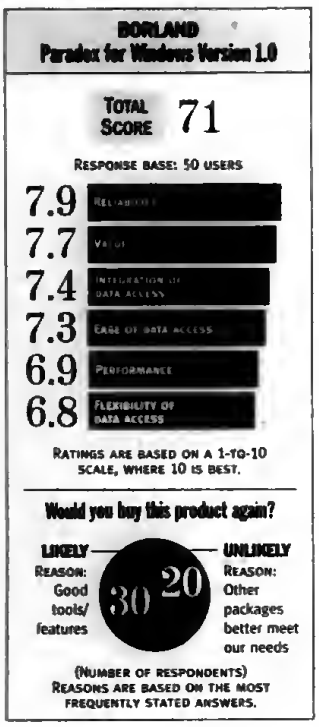
Methodology

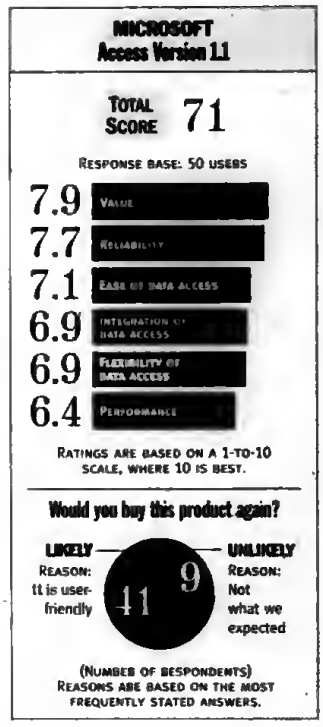
The Buyers' Satisfaction Scorecard survey was executed and tabulated by First Market Research in Austin, Texas. Random samples of PC database users were surveyed via telephone. The sample was provided by the *Computerworld* Database Division. SQL gateway users were obtained from random samples of vendor and nonvendor sources.

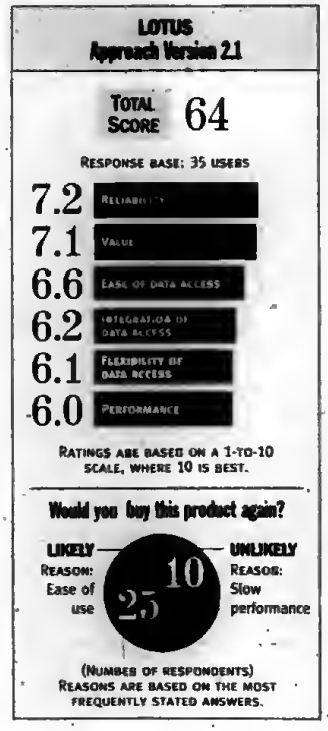
To calculate overall scores for the four PC databases rated in this Buyers' Satisfaction Scorecard, we took the average rating for each category and multiplied it by the average importance rating that users assigned to that category. The overall score is the average of all the weighted user ratings for that product.

Each user group rated its own product independently of the other products. Users were not asked to make any direct comparisons. ■









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CrossAccess

Standardized SQL a plus with users

Cross Access Corp.'s CrossAccess

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

- CrossAccess users said the data-access tool is very reliable and easy to install in heterogeneous hardware and database environments.
- However, they wanted improved performance and better control over database access.

Companies moving to client/server applications learn that their biggest problem is not end-user development tools or desktop operating systems. Rather, it is tying together disparate databases, many of which exist in legacy systems too complex or too important to be changed.

One solution is the technology developed by Cross Access Corp. in Oak Brook, Ill.

Called CrossAccess, the data-access technology is essentially a suite of middleware that provides a standard interface to a variety of legacy and SQL databases. Client applications communicate with the CrossAccess layer using ANSI SQL, and CrossAccess converts that code to the native language of the target database.

CrossAccess supports MVS databases including DB2, IDMS, IMS, VSAM and Focus. SQL database support includes SQL/DS, Oracle and Rdb. The CrossAccess products run on a variety of platforms including MVS/XA, Sun Microsystems, Inc.'s Solaris, IBM's AIX and others.

Participants in this evaluation included technical managers from a university, a food manufacturer and a telecommunications firm. They have been using CrossAccess for periods ranging from four to nine months.

The format of this evaluation was created with the assistance of Howard Rubin Associates and Technology Investment Strategies Corp.

Installation

The evaluators agreed that installation was far easier than expected. Installation time in all cases was less than one man-week.

Food manufacturer: "If you have TCP/IP already in place, it takes less than one man-week to get an application running."

Communications firm: "We allowed two weeks to get it up and running, but it happened in one and a half days."

Reliability

Although a relatively new and complex software system, CrossAccess is fairly reliable, the evaluators said. They experienced various problems and glitches but said these were expected and generally fixed by Cross Access in short order.

University: "I'm not going to say there were no problems, but it has been one of the more solid pieces of software we've installed."

Food manufacturer: "We are trying to do some moderately complex joins across several files, and it is failing. We have a fix, but we haven't yet installed it."

Performance

Only one of the evaluators had conducted formal performance testing. The others were planning to do so in order to optimize their internal systems.

Food manufacturer: "Performance is acceptable."

Communications firm: "We have been through performance trials with other products. [CrossAccess] wasn't terrific, but it was better than we expected."

Technical support

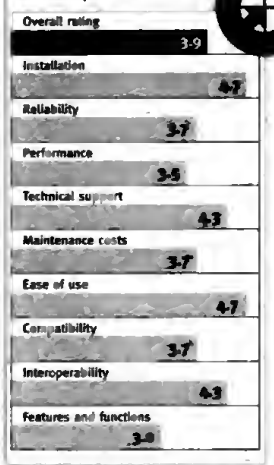
Technical support was above expectations, the evaluators said. Access to top technical personnel at Cross Access was possible, and the company was compared to "the IBM of 10 years ago."

University: "There is good availability of the technical staff."

Food manufacturer: "They call me once a week because they want to know what kinds of problems we have. There is also a field guy who does follow-up."

CrossAccess 1.8

Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance.



Costs

Initial purchase costs exceeded $100,000 for all evaluators. However, they said this was a reasonable expense for the value gained. Two to four technical personnel were assigned to CrossAccess duties.

University: "We looked at all of the database gateways, and they're all expensive."

Food manufacturer: "There were no cost surprises and no hidden installation costs. We budgeted money that we haven't yet spent."

Ease of use

Since it uses ANSI-standard SQL, the evaluators said using CrossAccess is simple and straightforward.

Food manufacturer: "It was much easier to use than any other system we looked at and much simpler."

Communications firm: "It is easy [to use] because they use standard SQL and run it through a precompiler."

Compatibility

There were no major compatibility issues, the evaluators said. Once installed, CrossAccess worked well with existing applications.

Communications firm: "We have the same pains with CrossAccess as with most integration issues. But we found that some applications worked right away."

Interoperability

The evaluators were working in mixed environments with a variety of hardware and operating systems. All were running IBM's MVS and a TCP/IP component for network connectivity. A variety of Unix implementations were also being used.

University: "One reason we went with CrossAccess is that we didn't have to upgrade any existing applications."

Food manufacturer: "The move from one platform to another is pretty easy."

Communications firm: "They do a better job [with interoperability] than other vendors." ■

Written by Computerworld *senior editor Garry Ray.*

Cross Access responds

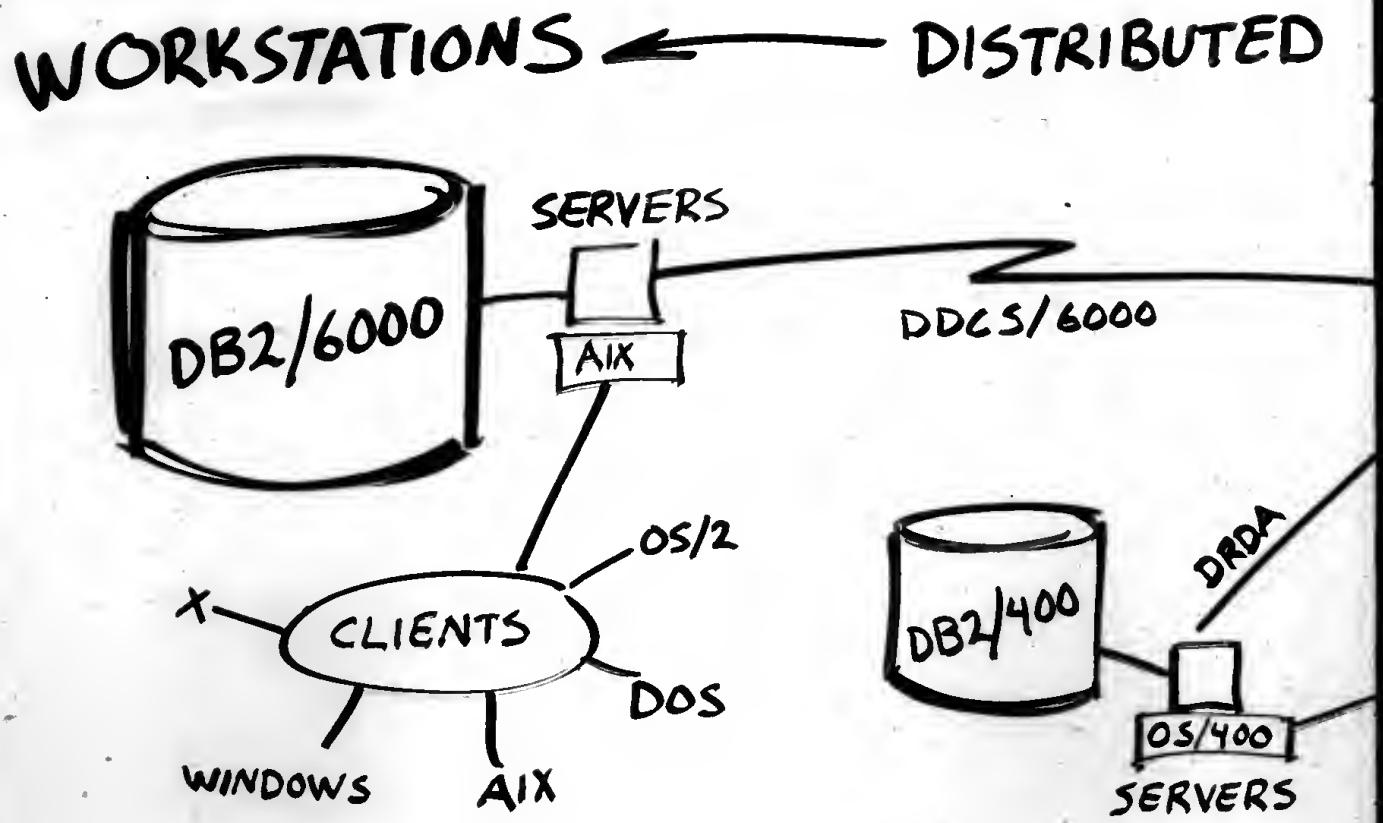
Cross Access Chief Operating Officer and Executive Vice President Anthony J. Paoni responded to issues raised in this evaluation.

▶ **Macintosh support:** We will introduce Macintosh client software in the third quarter of 1994. It will include an ODBC version of the Apple Data Access Language interface.

▶ **Query governors:** We have a query governor on the system to prevent users from requesting all the data in the database. This is set using a time or records parameter. We will be introducing population statistics in a more robust governor in the fourth quarter.

▶ **Performance:** We have an upgraded performance release slated for the fourth quarter.

Where can you safely put your data in a distributed environment?



Anywhere

Distributed environments offer many strategic advantages. But they can also complicate the picture when it comes to managing data safely and reliably.

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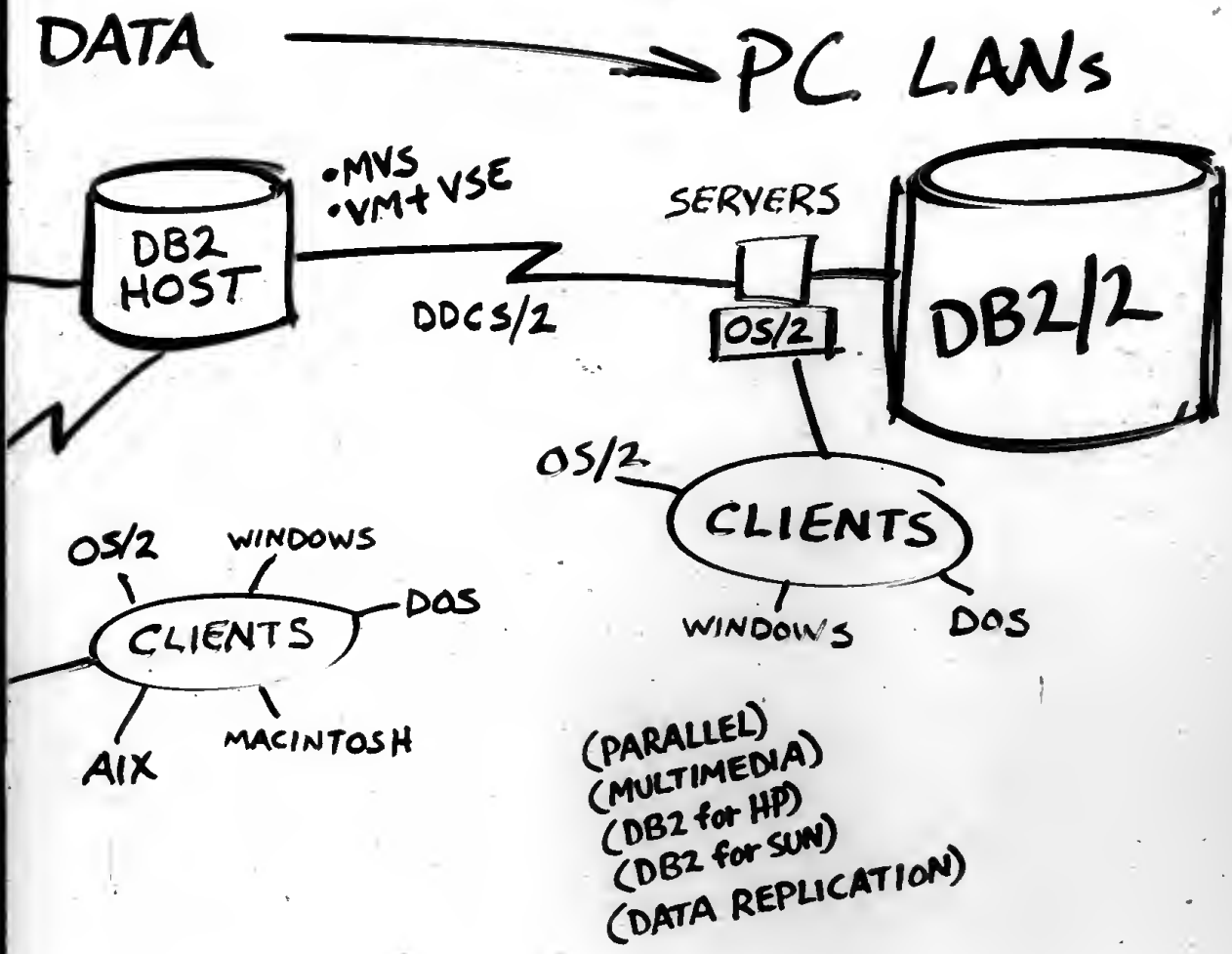

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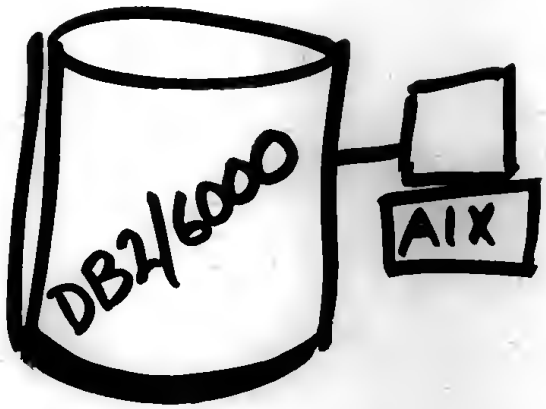

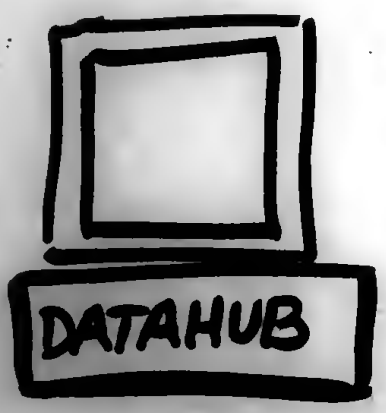

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Gateways still need work

By Richard Finkelstein

There are a lot of hurdles to legacy data access, no matter what promises you may hear about "easy querying" and "seamless access."

During the past five years, many companies that bought into database gateways looking for easy access to legacy data have walked away disappointed.

For the most part, legacy database gateways have been successful only when used to support low transaction volume and simple queries. The promise that a database gateway can access any data source, on any platform, across any network — and join all this data together — is still just marketing noise.

Users can overcome the obstacles but doing so requires well-thought-out design and good programming. Users have to make sure the following issues are addressed before buying into a solution.

1. Defiant data structures

VSAM, IMS and CA-IDMS databases are intrinsically difficult to access. If they weren't, people wouldn't be moving in droves to relational database management systems.

Putting a database gateway in front of a legacy database does not remove this inherent obstacle. The gateway must still deal with limited access paths, hard-to-use non-SQL data manipulation languages and the complicated storage structures of hierarchical and networked DBMSs.

Even where the connection is successful, the difficulties can cause performance problems. Developers who program explicitly for these files have a tough enough time extracting good performance. Gateways, which must generalize their access plans, usually attain only mediocre or poor access speeds.

2. Limited communication bandwidth

Infrastructure issues also cloud the process. Most users do not have high-speed lines to support the large number of users who want to attach PCs to legacy mainframe data. These issues will be worked out during the next few years, but nothing changes overnight. Extra communication bandwidth has to be cost-justified before an organization will incur the cost of rewiring its enterprise.

3. Limited mainframe capacity

Mainframes typically run at or near capacity. They are highly tuned because they have to support mission-critical applications with guaranteed response times. Systems support personnel try to squeeze as much work as possible out of the mainframe because of the costs of upgrading. Introducing new and ad hoc applications into the mix can disrupt the delicate equilibrium that now exists.

4. Administration headaches

There are relatively few tools for managing remote workstations. Issues such as security, software management and problem detection and resolution still weigh heavily on the minds of the systems support personnel who are chartered to keep the mainframe system running smoothly.

5. Unreliable software offerings

Some gateways appear to be hurriedly put together so the vendor's salesperson can fill in a box on a checklist. In the worst-case scenario, that means a buggy gateway. Otherwise, the gateway may simply exhibit very poor performance characteristics because it has not been optimized for a particular communications or operating system environment.

Focused solutions tend to be the best. In general, the more a vendor claims, the less it is able to deliver. The good news is that vendors are starting to understand this. ■

Finkelstein is president of Performance Computing, Inc. in Chicago.

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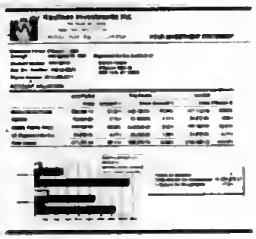

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LANGUAGE BROUHAHA:

Is COBOL DEAD?

BY ALAN PURSELL

If Cobol were dead, then most of the entire business world as we know it could not function. Cobol and the mainframe computers that run Cobol programs are the heart of business today and will remain so for some time to come.

How do I know? I work with Cobol for a living as an independent consultant. For the past 20 years, I've gone into large companies such as Mervyns, TRW, Inc., Lockheed Corp. and IBM's Rolm Systems and helped build Cobol-based systems. I've not been lacking for Cobol work, even though I'm based in the Bay Area amid all the PC fanatics.

If Cobol is dying, then no one has told some of the biggest corporations in America.

The question isn't "Is Cobol dead?" but "Why is Cobol still alive?" This may be a tough question for people with "small" minds working with "small" talk on "small" machines.

> Cobol is easy to code, read and debug

Cobol's staying power (that's *more than 30 years* of staying power) is attributable to the fact that it's good at what it does. When it came on the scene in 1959, it took over from very difficult languages such as assembler and Fortran, languages that made their mark in scientific number-crunching applications. The need was tremendous for a Common Business-Oriented Language that was easy to code, easy to read, easy to debug and easy to maintain.

And that's still true today. Cobol's secret is that it uses English instead of hieroglyphics. It enables standardized data names, 88 levels, copybooks and meaningful paragraph names, so developers can write a program that reads almost like the English language.

And as long as developers write Cobol programs adhering to strict standards, any programmer can pick up anyone else's program and understand it quickly and easily.

Opponents might say Cobol is not as efficient or versatile as some other languages, but I think that argument is irrelevant. MIPS and DASD are not the major expenses of information systems development. The most costly factor is people. Cobol minimizes the cost of programmers because it is a standard. More people know it, and programs get written quicker and are more easily maintained.

Face it, Cobol is king. It has fended off wannabes such as PL/I, Algol, APL, Snobal and Basic. Now it has competition from trendy object-oriented languages used to build those cutesy Windows applications. Object-oriented languages might process in an event-driven fashion, but there are so many of them and they are so diversified that a maintenance nightmare is inevitable.

Standardization among object-oriented languages will come about, sure, just as standardization among PCs has come about.

People with limited data processing experience think that languages such as C, C++, Smalltalk and Visual Basic are better than Cobol. Well, from a PC standpoint, they might be right. Unfortunately, when you're talking about

Pursell, *page 116*

Alan Pursell: 'Cobol is the life-blood of an enterprise system'

SOUND OFF!

AT ISSUE: When it comes to business programming languages, everyone's got an opinion on the granddaddy of them all, Cobol. Either it's the best thing since sliced bread or a pitiless excuse for a language. Our two debaters — a Cobol aficionado and an object technology proponent — lay it all out for you.

BY JOHN CUNNINGHAM

Cobol. It is the language of the Living Dead, a decrepit tool that inhabits a hoary technological netherworld. At the heel of this demon follow its minions, Lost Information Systems Souls who drone mindlessly to pollute American enterprise with billions and billions of wretched, fetid lines of code. These pollutants deprive the enterprise of its clarity of purpose. They inhibit growth and efficiency. And with the businessman's last gasp of breath, he curses IS and the evils it has brought to his enterprise. And so Cobol has tarnished the businessman's view of information technologies forever.

John Cunningham: 'What has Cobol done for us lately?'

I'm being a bit melodramatic, yes, but the point of my scenario is this: Cobol is no longer a strong match for much of the corporate computing needed today and in the future. So while it might still be hanging on, its future doesn't look too bright.

In the rigorous and demanding corporate world of the 1990s, the most relevant aspects of software development are minimizing costs, shortening cycle times and maximizing quality. Combining these three elements is a sure route to increased competitiveness and satisfied customers, both internal and external.

The objectives for systems development have always been moving targets. But the targets' velocity has accelerated. We've got to go on, to adopt a next generation of tools to address rapid change. After all, what has Cobol done for us lately? In most instances, IS groups just keep building unusable or buggy systems that are over budget and delivered late.

If you haven't guessed, I'm a big object technology proponent. Although I don't think the technology will be a cure-all, I know that my success ratio using Smalltalk (from Digitalk, Inc. or ParcPlace Systems, Inc. or IBM) is much better than some of my neighbors' projects using Cobol.

For instance, I can think of two very successful Smalltalk projects I worked on that came in under budget and on time. In the first, a litigation management system, my colleagues and I were able to do all four phase requirements in the time allotted for just two phases. We started in January 1992 and were done in early August 1992.

Not only was the second project, one for customer service call tracking, on budget and on time, it had approximately 40% more functionality than originally specified. We did analysis and prototyping from October to December 1993, built the system from January through March of this year and began installing it on March 28. When done, we will have rolled it out to 15 sites and more than 800 users.

The business environment is hurling challenges at us; Cobol shops are too slow to respond. That's not any way to run a business! The Cobol culture I've observed in corporate IS is rigid and bureaucratic in organization and development processes. It is geared only toward large-scale monolithic business applications and is brittle and unable to change with the business.

It's been my experience that the growing business response to the Cobol environment has been either to outsource or to scrap custom development in favor of purchased packages customized by vendors or consultants. Even independent service vendors — companies that tend to be innovators in applying promising techniques and technologies — don't write their applications in Cobol, but mostly in C and C++.

The culture and tools in the Cobol world just don't fulfill the vision of systems that businesses have today.

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New systems must run easily on multiple platforms without rewrites. Cobol development doesn't work that way.

Cobol doesn't work that way, but object-oriented systems, such as Smalltalk, sure do.

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We can accept most specification changes up

Cunningham, *page 116*

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Pursell

CONTINUED FROM PAGE 112

what language to use for enterprisewide development — for such applications as invoicing, accounts receivable, accounts payable, general ledger, profit and loss, etc. — the choice in 90% of all cases is Cobol.

The very fact that Cobol keeps such bread-and-butter business applications going is what provides the revenue to pay for the toys with which PC network users play.

Actually, the question of why Cobol has been so successful goes far beyond the language itself. Cobol represents an entire philosophy. It is a philosophy of large-scale, centrally maintained and strictly standardized computer systems that all users can share. The days of renegade PC users and their obscure languages are over.

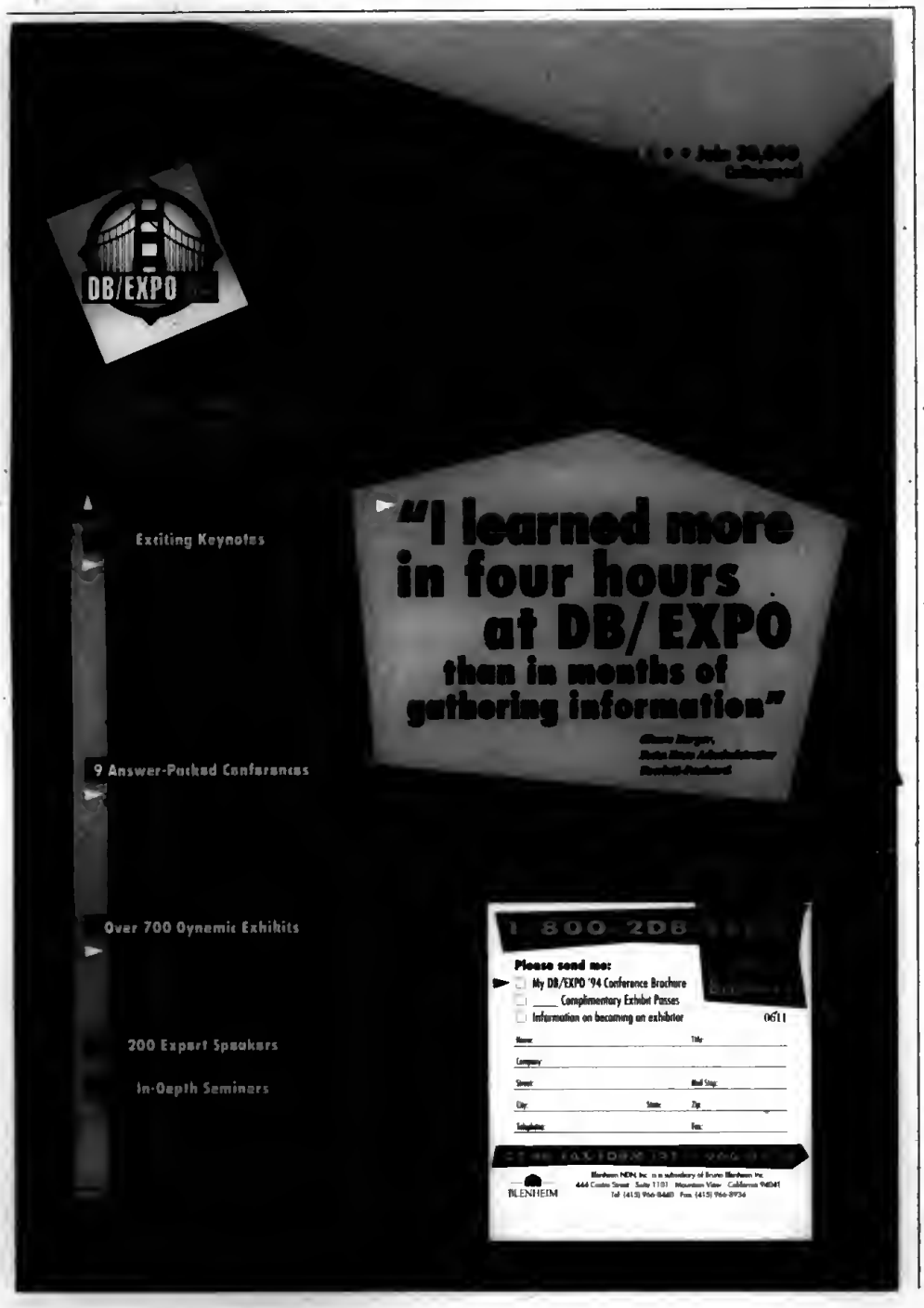
SOUND OFF!

In fact, the PC world has borrowed from large systems. Although workstations have processing capability and a C drive, all the application programs and their files reside on a shared F drive that is centrally controlled and backed up. The mainframe is still a big part of the enterprise philosophy. Cobol is definitely not part of the living dead. It is very much the lifeblood of an enterprise system.

Perhaps the biggest compliment to Cobol comes from the very object-oriented people who have scorned it for all those years. Object-oriented Cobol apparently will debut in the fall. Just as enterprise network designers have copied the philosophies of mainframe systems (i.e., central control and backup), object-oriented language designers are now copying the philosophies of structured Cobol.

Dare I say the day will come when all Windows applications will be written in structured object-oriented Cobol? ■

Pursell works for large companies doing systems analysis, design programming and testing through his company, PCONS, Inc. in San Francisco. He is a member of the Independent Computer Consultants Association.



Cunningham

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until the week the system goes live. The compartmental nature of objects, combined with powerful Smalltalk tools such as ObjectShare Systems, Inc.'s Window-Builder, a windows painter, and Object Technology International, inc.'s Envy/Developer, a team programming and configuration and version management tool, enables us to confidently make changes until the switch is flipped that brings the system into production.

Don't try this with Cobol.

You can find further proof that Cobol is dying in the extensive efforts to resurrect it. The Codasyl Cobol Committee is in the midst of proposing a standard for Cobol called (surprise!) object-oriented Cobol. In May 1989, the great minds of the Cobol world recommended taking the central characteristics of Smalltalk and force-fitting them into the Cobol language.

> The culture and tools in the Cobol world just don't fulfill the vision of systems that businesses have today.

In choosing this path, I think the Cobol community is acknowledging that Cobol as we know it has limited usefulness. They are also admitting that this "object stuff" is the most promising software technology available today.

If you believe, as I do, that the radical overhaul of a language signifies that its current incarnation has run its useful course, then we agree that Cobol is indeed leaving this life.

Perhaps Dr. Jack Kevorkian is available for consultation. ■

Cunningham is the technical manager of object architectures (a.k.a. Smalltalk consultant and mentor) at a diversified financial services firm in Connecticut.

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95 Other ____ (Please Specify)

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22 Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr. /PC Mgt., Tech Planning, Admin Svs.
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Computer Careers

At the border of us and them

Liaison positions between companies, suppliers and their customers are often demanding and thankless jobs. When done right, efforts should be invisible, but it's hard to put that on paper.

By Bronwyn Fryer

IN AN INDUSTRY WHERE SUCCESS depends on hitching your wagon to the right star, that star could be your current project. By leveraging such experience, information systems professionals can take advantage of emerging trends to develop invaluable specialties.

One such trend that brings about new opportunities is the "borderless company." Along with downsizing, rightsizing and outsourcing, creating corporate alliances in the form of partnerships with vendors, clients and customers is an emerging arena for businesses interested in achieving rapid turnaround.

A growing number of companies bring in systems integrators and outside consultants to handle tasks that they don't have time to manage. Others set up electronic data interchange and other systems that share data with customers and clients such as order-fulfillment, inventory or accounts payable systems.

Relationship management

Managing these relationships, where data flows among organizations, requires some savvy. Not only must the person ensure that technical needs are met but also that the company's financial, informational and legal interests are protected.

Often such a manager is an internal systems analyst, application developer or other IS professional who is handed the responsibility of overseeing a project, such as building a client/server database system or developing an application. They must understand their company and its partners. At the same time, flexibility is key.

"You need to be able to work in changing situations," says Steve Wyatt, IS manager at Pan Canadian in Calgary, Alberta. "That means being able to take suggestions and change the way you do business to make the relationship work."

Highlight accomplishments

Such skills are difficult to demonstrate, says Ken Simpson, application development director at Tri Valley Growers, an $800 million produce canning and marketing firm in San Francisco. "They are not as documentable as proving that you know SQL."

For that reason, IS directors suggest collecting letters of recommendation from both internal managers and outside clients with specific examples of how different relationships were maintained.

Those who can demonstrate a knack for managing outside relationships can set themselves up for high visibility.

"You can gain credibility by demonstrating how you used similar skills elsewhere," Simpson suggests. "Once you gain management's confidence, ask to be challenged further on new projects."

In many cases, IS professionals with excellent experience and professional contacts can leverage both to set up their own consulting businesses.

According to Simpson, who has worked with independent contractors who specialize in project management for companies, "they do it by producing quality work and leveraging contacts to develop a healthy referral business." ■

Fryer is a free-lance writer in Menlo Park, Calif.

Leveraged experience

Bill Thomson, director of information technology at Prime-Source in Burlingame, Calif., parlayed his experience into a successful consulting career.

Thomson, who spent the major part of his career as a contract consultant, got his start at Martin Marietta Technologies, Inc. and Computer Sciences Corp., where he successfully led several programming projects and managed both internal and external clients. He says if you do your job right "you'll get recognized for it in some way," but he adds that it doesn't hurt to advertise your accomplishments.

His suggestions include the following:

- **Initiate an in-house newsletter describing the offerings and benefits of new systems, software or other projects you've worked on. Distribute it via electronic mail or post copies by watercoolers.**
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JOB SECURITY is in the EYES OF THE BEHOLDER

By Leslie Goff

From all appearances, information systems professionals have a certain good-natured pessimism about the future of their jobs. In both a formal survey and a random ISer-on-the-street poll that asked which position is the most secure, "none" was the second most frequent response.

In our phone poll, for example, we reached one network manager at a financial services company who had just learned that his company had decided to outsource IS. Another respondent, Tony Ieradi, network/telecommunications manager at Wawa Food Markets in Wawa, Pa., says his company is reorganizing, and everyone has to reinterview for their jobs.

Room for optimism

Phone respondents delivered their observations with a good dose of laughter. When pressed, nearly all were ready with an opinion.

The consensus: Because of rightsizing, general technicians who can support systems and maintain hardware are at the least risk of losing their jobs, while all levels of management are under the most scrutiny. "If we split up the IS department, the manager might go away, operations could disappear. But there is always a need for technical support as long as there are users," says Jonathan Pederson, director of technical services at Midcontinent Media, Inc. in Sioux Falls, S.D. One manufacturing executive notes, "Can you imagine an IS department without someone to back up the data?"

While management took a beating in our phone poll, vice president-level positions ranked fourth out of the nine most secure jobs in our formal survey. "The most secure IS position is definitely not management of any sort," says Ken Vannelli, systems programmer at Minnesota Intertechnology Group in St. Paul, Minn. "One of our goals is to get rid of layers of middle management."

Local- and wide-area network specialists have good long-range prospects by all accounts. Network and WAN managers scored a combined 24% in the formal survey, while network managers/specialists tied for second with "none" in the phone poll.

Network manager	22%
None	12%
Programmer	9%
Vice president/president (CIO level)	5%
Data processing	4%
Analyst	4%
Systems support	4%
WAN managers/support	2%
Systems integration	2%
Software developer	2%
Other	34%

Well-rounded beats all

Answers often corresponded with the respondents' positions. Some noted that they felt secure in their skill sets but worked in inherently volatile environments.

A systems administrator in a high-ranking state government office, for instance, says, "I work in a political environment where nothing is secure."

The administrator adds, however, that individuals with broad network management skills, a good knowledge base and knowledge of the ins and outs of everything on a system — as opposed to having a niche set of skills — will be the best positioned in any IS workplace. ●

Goff is a free-lance writer in New York.

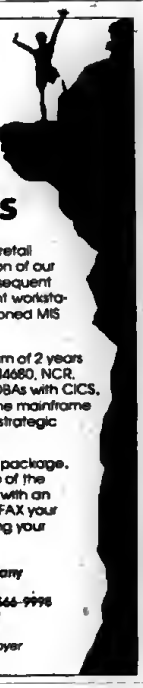
ON THE SPOT

When *Computerworld* randomly phone-polled a mix of IS professionals asking which IS position is the most secure, their spontaneous answers were somewhat different than our survey results.

MOST COMMON INITIAL RESPONSE:
Laughter, followed by more laughter. "Is there one? The way things are changing lately it's hard to say who's safe. I guess any group of individuals who put together the critical applications. If you lose them, there's no one to carry IS on." *John Stocker, NetWare administrator, Southeast Pennsylvania Chapter of the American Red Cross, Philadelphia*

MOST THREATENING RESPONSE (TO SOME):
"It's certainly not management. That area seems most volatile. When it comes time to cut through IS shops, they're the ones that go." *Jonathan Pederson, director of technical services, Midcontinent Media, Inc., Sioux Falls, S.D.*

MOST REASSURING RESPONSE (TO SOME):
"Techies are more secure because if you develop the right technical skills, you're secure in mainframes, LANs, PCs. Wherever the applications are, you can still support them, so you will always be needed." *Ken Vannelli, systems programmer, Minnesota Intertechnology Group, St. Paul, Minn.*



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St. Louis beats the blues

Despite local hardships, experts are upbeat about St. Louis' job market which is growing as firms search for a variety of technical skills

regional scope

By Kate Colborn

For a region that has been racked by floods and layoffs, St. Louis' job market for information systems appears to be faring well.

"There's a positive mood here," says Cindy Breth, St. Louis area president of Robert Half International, Inc. "The market is better than it has been in years."

Small hiring bursts are occuring at firms ranging from financial services to retail chains, and the in-demand skills mirror those mandated countrywide.

Recruiters such as Cap Gemini America expect business and hiring to be "noticeably better" in 1994, says Dennis Lay, staffing manager at the company's St. Louis office. Even the St. Louis Regional Commerce and Growth Association reports that hiring is up.

One firm that is hiring is consulting house Daugherty Systems. Daugherty, which specializes in Unix-based open systems and PC technologies, plans to bring aboard 40 consultants this year, reports Michelle King, corporate staffing specialist.

The firm looks for skills in Unix, C and relational databases. PC consultants need experience with Microsoft Corp.'s Windows and Visual Basic and Powersoft Corp.'s PowerBuilder. "We like people who have a varied background," King says. "If they have Unix plus Windows, they're more valuable to us."

One St. Louis company that's poised to make the plunge into new technologies is stockbrokerage Edward D. Jones & Co. Rich Malone, the firm's partner for IS, reports that the company is "aggressively" hiring new people and is looking for skills in both the mainframe and client/server worlds.

PC software demand

Another firm with a need for client/server skills is Maritz, Inc. in Fenton, Mo., which designs and manages a variety of performance enhancement programs.

As Maritz moves forward with its conversion plans, the firm will have openings for programmer/analysts with experience in a Unix client/server environment and expertise in Oracle, says Janice Huebner, director of human resources. Maritz is also looking for programmer/analysts familiar with a variety of PC software packages, such as those from Lotus Development Corp. and Microsoft.

St. Louis is the home of the operations center for Mastercard International and the center from which it maintains the world's largest X.25 packet-switched network, according to Tom Taylor, human resources consultant.

Mastercard's transaction volume is growing at the rate of 23% a year, Taylor says, which necessitates a "re-engineering of the entire infrastructure." This will include a move to technologies such as object-oriented programming, graphical user interfaces and client/server architectural models. Mastercard has been hiring IS people in St. Louis for the last three years, Taylor says. In fact, it has been one of the few area companies with consistent employee growth.

Retail industry growing

The May Merchandising Co.'s chain of department stores recently moved its headquarters from New York to St. Louis, and the nearby city of O'Fallon, Mo., is home to Venture Discount Department Stores.

Venture has recently converted its in-store systems to Unix, and although it retains a central mainframe, there are development projects and jobs in both Unix and IBM mainframes, says David Rosen, who handles IS hiring.

Like most established business centers in the U.S., St. Louis still has a sizable mainframe legacy. The economic upturn means that deferred maintenance and redevelopment programs can go forward, which may account for a surge in requests for IBM mainframe programmer/analysts, says Ken Stevenson, staffing manager at Lindenberg and Associates.

In addition to a steady demand for PC, Unix and AS/400 specialists, Stevenson says he has seen a significant increase in the need for mainframe skills in the last three months.

"A lot of maintenance got shoved to the side over the last three years, and now there's a lot of catch-up work," Stevenson says. ■

Colborn is a free-lance writer in Center Harbor, N.H., who writes about technical careers.

St. Louis

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- knowledge and understanding of the TCP/IP protocol
- knowledge and understanding of the X Windows environment

Skills desired, but not required for this position are:

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To qualify for this position, you will need a Bachelor's degree, project management experience, technical knowledge of DEC VAX systems, a minimum of two years' experience with VMS, ALL-IN-1 (WPS, Scripts, Forms, and UDP's), and familiarity with programming concepts. Experience with UNIX environments, spreadsheets and graphics is also preferred. You should have experience with user interviews and analysis work and the written and oral communications skills, and interpersonal skills to work with technical, management, and user groups.

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The successful candidate will have a minimum 3-5 years experience using ACF2 in a large MVS/CICS environment. You must be a team player who has excellent communication skills and possess the ability to handle multiple tasks simultaneously.

You will be responsible for the security aspects of system and application software installs as well as providing daily support as a member of the Systems Security Team at Edward D. Jones. The ability to author security policies and experience with security in a UNIX client/server would be beneficial. A Bachelor's degree in DP or MIS is preferred.

Our firm offers competitive compensation and benefits and a strong commitment to technology, all at a convenient St. Louis County location. Please submit your resume indicating your position(s) of interest to: **Edward D. Jones & Co., 201 Progress Parkway, St. Louis, MO 63043, Attn: Human Resources/DP-Ad.**

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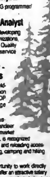

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PROJECT LEADER (Ref. #19594) - to consult with clients to ascertain & define their business requirements or problem areas utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients, electronic data processing systems; develop an integrated LINC based Mutual Fund System, a computerized share accounting package on UNISYS A machine using DMS II, COMS, CASE TOOLS & COBOL, system optimization & user training. Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Project Leader, Consultant or Trainee Programmer. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, working on finance accounting system developed using LINC, software development for computerized share accounting & user training; & using UNISYS A machine, COBOL, DMS II, COMS & CASE TOOL. $34,000/yr. 40 hr/wk., 8:30a-5p. Send resume to 7310 Woodward Ave, Rm #15, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

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Programmer/Analyst - Moline, IL - Prepare functional and program specifications, design/develop programs and databases, interface IBM mainframes with VAX clusters using SNA for on-line and batch data transfer; use MVS/ESA/XA, IMS DB/DC, DB2, VSAM, SAS. 3 years experience. 40 hours/week (9-5); $38,000/year. Must have proof of legal authority to work permanently in the U.S. Send resume to: Illinois Department of Employment Security, 401 South State St - 3 South, Chicago, IL 60605. Attention: Jack Schaffer. Reference: #V-IL 11463-J. NO CALLS. AN EMPLOYER PAID AD - SEND 2 COPIES OF RESUME.

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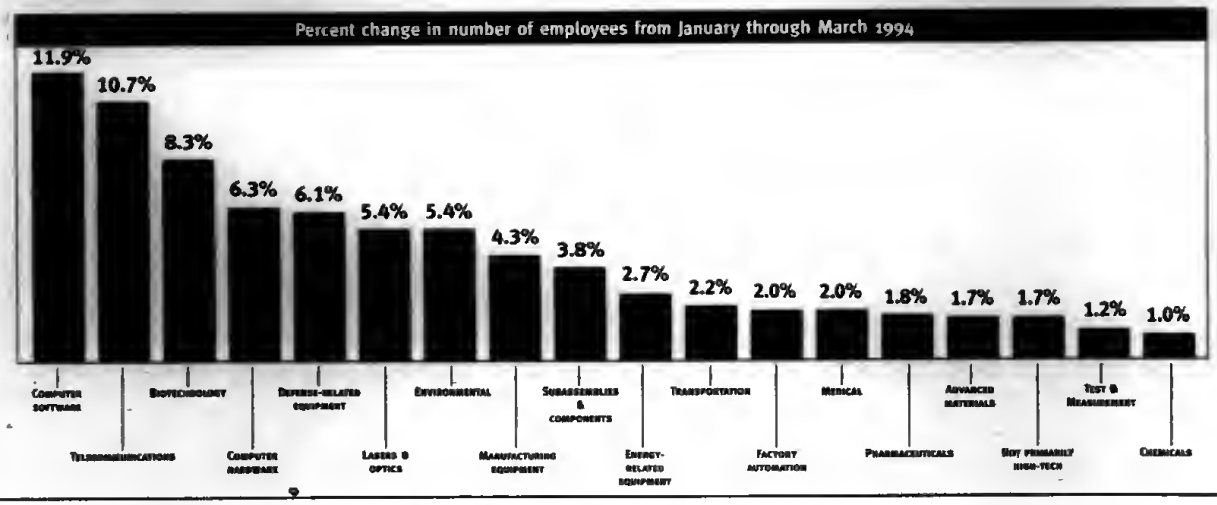

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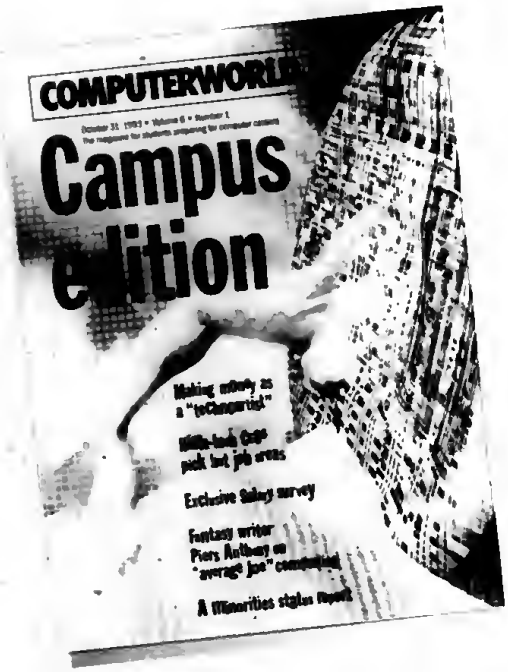

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Planned Editorial Features:
(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Information Systems salaries from Computerworld's annual survey with the Association for Systems Management
- And much more!

BUYER BEWARE

Portable insurance

By Julie Hart

Do your employees travel with portable computers? If so, you'd better tell them not to let the machines out of their sight — even if insured. Most insurance policies won't pay if a portable is stolen unless there is physical evidence of forced entry.

"Theft is a big problem," says Dave Johnston, chief executive officer at Safeware, The Insurance Agency, Inc. in Columbus, Ohio. "If you have coverage, find out what it covers before you have a loss."

Safeware is one of the few companies that will replace a laptop if it is stolen from your home or at an airport. Most other companies consider such theft a "mysterious disappearance" and provide no coverage.

Safeware won't cover a portable that is stolen from a vehicle, however, unless strict conditions are met. For example, if the car is left in a public, attended or private garage, don't expect the portable to be replaced or repaired.

Did you know...

For every 1,000 portable computers, only five are insured.

40% of insurance claims for portables are for theft; 25% are for accidental damage; 20% are for power surges; and 15% are for natural disasters.

Insurance generally costs $2 to $5 per $100 in value per year.

Source: Safeware, The Insurance Agency, Inc., Columbus, Ohio

Covering your assets

Most insured portables are covered under an Inland Marine policy, a catchall insurance policy for mobile property.

Inland Marine policies are flexible, says Susan Fontaine, commercial underwriting manager at Safeco Insurance Company of America in Seattle. Coverage is available for breakage, theft, computer viruses, power surges, software and data loss, vandalism and fire.

Insurance companies offer two types of coverage: replacement cost and actual cash value. For high-end portables, replacement cost is the best bet; the average cost is just 15% more than actual cash value insurance and requires no additional payment beyond the deductible.

With older portables, however, consider actual cash value insurance, which pays out what the portable is worth at the time it's damaged or stolen. For example, a laptop that cost $6,000 three years ago can be replaced with a comparable model today for $2,000. "Why insure for more than you need to?" Fontaine asks.

Either way, buying insurance for portables is easy. Simply provide the insurance carrier with the serial number and model and declare a value. But don't forget to read the fine print. ■

Hart is a free-lance writer in San Jose, Calif

Replacement insurance favored

■ Portable insurance costs and types of coverage vary. According to Safeco Insurance Company of America, most of its customers prefer replacement cost insurance, which covers replacement or repair at no cost beyond the deductible.

■ All policies have a minimum $250 deductible and do not cover "mysterious disappearances." In other words, there must be evidence of theft.

The following figures represent an average Safeco Inland Marine policy covering a portable computer. Actual cash value insurance costs about 10% to 20% less.

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Source: Safeco Insurance Company of America, Seattle

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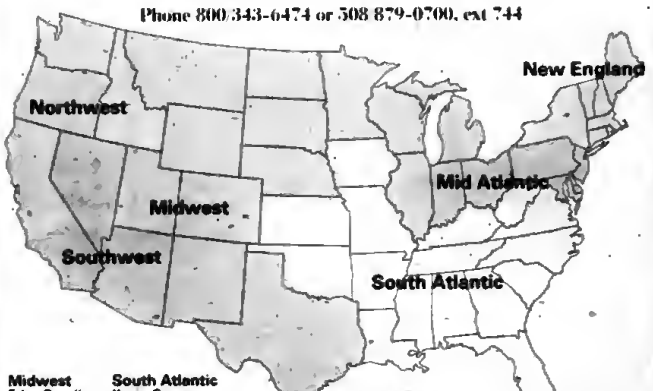

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Percent

Gainers		Losers	
Gateway Communications	58.4	Platinum Software (L)	-56.4
Control Data Systems Inc.	75.8	Cray Computer (L)	-50.0
McAfee Associates	19.4	NetFrame	-25.0
Emulex Corp	19.0	Recognition International	-21.0
Cheyenne Software Inc.	14.0	Digital Equipment Corp. (L)	-18.4
Bachman Info. Systems	11.1	Weitek	-18.4
Compaq Computer Corp.	12.2	Unisys Corp.	17.5
IBM	10.5	Informix Corp.	-17.3

Dollar

Gainers		Losers	
Compaq Computer Corp.	10.75	Lotus Development	-10.73
Microsoft Corp.	5.75	Powersoft	-5.75
IBM	5.63	Platinum Software (L)	-5.50
DSC Communications	4.75	Digital Equipment Corp. (L)	-4.38
Sybase Inc.	3.25	SynOpsys	-4.00
Cheyenne Software Inc.	3.25	Dell Computer Corp.	-3.75
Ameritech Corp	3.13	Informix Corp	-3.50
Texas Instruments	3.00	NetFrame	-3.50

[redacted]

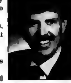
Murphy's market law

Michael Murpby, editor of "California Technology Stock Letter," recently spoke with *Computerworld* about the state of the market.

Where is the overall market headed right now?
The market correction isn't done yet. Undoubtedly it's going to bounce sometime, but we had an interest rate-driven bull market and now we have an interest rate-driven bear.

It probably won't be as bad as 1974, when 11 of the 12 months were down. But when you start with very high valuations, a correction can go on for quite some time.

We aren't bearish on all stocks, but you have to have companies that show very good earnings reports.



Murphy: *PC growth expected in Europe*

Are there any technology sectors that are safer than others?
There are two groups that are still fairly strong. One is PC-related companies — although Wall Street evidently doesn't believe that yet. Systems sales are still quite strong, and the typical system going out the door is loaded. That draws along a lot of electronics companies as well. For example, look at the disk drive companies; they're doing record business right now.

The other group is people who sell a lot in Europe, where the economy is about to pick up — Hewlett-Packard, Texas Instruments, Tandem, DEC, minicomputer-type guys, networking guys. They have cut interest rates enough in Europe. It finally will start picking up, and that provides a source of growth for these companies even if U.S. business is slow.

What technology stocks have the most reason to be concerned?
We're still wary on software stocks because Microsoft is being so aggressive and moving into so many business software areas. They're putting pressure on a lot of other companies.

And one other area I'm *not* too excited about is the "interactive, multimedia, convergence, blah blah blah" companies. I'm afraid of what these interactive trials are going to find. There are going to be some real disappointments there.

Ultimately, as a business, I'm not negative on it. But Wall Street is very high on it now, and the people actually working on these trials are not nearly as confident.

Exch	52-Week Range			Apr. 22 3PM	Wk Net Change	Wk Pct Change
Communications and Network Services						**OFF 0.42%**
OTC	63.75	19.83	3COM Corp	50.13	2.13	4.1
NYS	45.56	35.50	Ameritech Corp	41.75	3.13	8.1
NYS	65.00	48.50	AT&T (L)	52.63	2.63	5.3
OTC	26.50	12.50	Banyan Systems Inc.	16.25	-0.75	-4.4
NYS	69.11	49.00	Bell Atlantic Corp	54.00	2.00	3.8
NYS	43.88	50.63	BellSouth Corp	61.13	2.50	4.3
NYS	21.50	4.25	Bolt, Beranek & Newman	12.88	1.63	-11.2
OTC	15.75	8.50	Brooktrout Technology	13.50	-1.88	-12.3
NYS	132.50	79.50	Cabletron Systems	104.00	0.13	9.1
OTC	43.00	15.25	Centigram Communications	11.75	-0.75	2.2
OTC	60.25	28.75	Chipcom Corp	46.00	3.38	6.8
OTC	40.75	19.38	Cisco Systems Inc.	31.25	-0.75	-0.6
OTC	19.50	8.00	Compression Labs Inc.	10.38	0.50	5.1
OTC	12.38	4.88	Computer Network Tech.	8.50	-0.75	-8.2
OTC	36.00	8.50	CrossComm (L)	10.75	0.25	2.4
OTC	3.56	1.50	Data Switch Corp	2.00	0.00	0.0
OTC	6.38	2.25	Digital Systems Int'l Inc	2.50	-0.50	-13.0
OTC	73.13	31.50	DSC Communications	57.50	4.75	9.0
OTC	3.50	0.81	Gandalf Technologies Inc.	1.13	0.02	1.4
OTC	1.50	0.69	Gateway Communications	2.19	0.44	58.4
NYS	27.63	8.00	General Datacomm Inds.	13.00	1.50	11.1
ASE	3.13	1.75	Go Video	1.94	-0.13	-6.1
NYS	39.88	29.50	GTE Corp. (L)	32.38	2.38	7.9
NYS	95.97	72.25	ITT Corp	87.00	0.50	0.6
OTC	29.88	21.50	MCI Communications Corp	23.50	1.25	5.6
OTC	7.75	1.50	Micadcom Inc.	5.75	-0.18	-0.1
OTC	7.75	3.50	Netrix Corp	5.75	-0.75	12.5
OTC	11.75	5.50	Network Computing Devices	5.50	-0.75	-12.0
NYS	33.13	6.00	Network Equipment Tech.	8.25	-0.50	-5.7
OTC	73.38	8.00	Network General	12.00	-0.63	-3.5
OTC	10.13	6.63	Network Systems Corp	6.93	-0.63	8.6
OTC	73.88	28.38	Newbridge Networks Corp	48.38	1.00	5.8
NYS	38.63	21.50	Northern Telecom Ltd.	27.38	-0.88	-3.1
OTC	33.50	16.38	Novell Inc.	16.50	0.38	2.3
NYS	48.88	33.25	Nynex Corp	35.75	0.25	0.7
OTC	50.00	19.25	Octel Communications Corp	22.25	-0.75	-1.1
OTC	18.25	8.00	Optical Data Systems Inc	16.75	0.25	1.5
OTC	7.50	2.75	Penril Data Comm Networks	5.38	0.00	0.0
OTC	27.25	11.00	PictureTel Corp (L)	11.00	0.63	5.4
OTC	8.25	3.63	Proteon Inc	5.38	-0.38	-0.5
NYS	38.88	23.75	Scientific Atlanta Inc	28.00	2.38	9.3
NYS	47.00	50.75	Southwestern Bell Corp.	43.13	2.13	5.2
NYS	40.25	30.63	Sprint Corp	37.63	2.63	7.5
OTC	26.75	13.00	Standard Microsystems Corp	16.38	0.11	0.8
OTC	22.25	10.50	Stratacom Inc. (H)	22.00	0.88	4.1
OTC	42.75	18.75	SynOptics Communications	19.75	-0.50	-2.5
OTC	15.75	2.88	Telebit Corp	3.13	-1.13	-9.2
OTC	46.00	18.50	US Robotics	31.94	0.00	0.2
NYS	50.75	38.50	US West Inc	45.25	2.75	6.8
OTC	87.75	38.50	Wellfleet Communications	70.25	0.25	0.4
OTC	28.25	8.25	Xircom	21.63	1.25	5.5
OTC	30.00	13.75	Xyplex Inc (L)	15.50	-0.75	4.6
PC and Workstations						**OFF 0.39%**
OTC	7.50	2.50	Advanced Logic Research	6.00	0.50	7.7
OTC	59.13	27.00	Apple Computer Inc.	29.75	-0.50	-1.7
OTC	33.00	13.25	AST Research Inc	17.75	-1.50	-7.9
NYS	4.63	0.50	Commodore Int'l	0.88	0.00	0.0
NYS	107.88	43.13	Compaq Computer Corp.	107.88	10.75	11.1
OTC	36.38	13.50	Dell Computer Corp	22.38	3.75	-13.8
OTC	25.00	16.75	Gateway 2000 Inc	19.88	3.75	8.7
NYS	83.63	64.38	Hewlett Packard Co	78.00	-0.25	-0.3
NYS	26.88	15.38	Silicon Graphics	23.88	2.00	9.1
OTC	32.63	23.13	Sun Microsystems Inc.	22.63	0.13	0.6
NYS	50.75	28.13	Tandy Corp.	33.13	0.13	0.4
OTC	5.13	2.50	Zeos International Ltd	2.88	-0.13	-4.2
Large Systems						**OFF 5.96%**
ASE	7.38	4.38	Amdahl Corp	7.25	0.50	7.4
NYS	7.63	3.63	Convex Computer	6.00	0.50	8.3
OTC	4.50	0.50	Cray Computer (L)	0.94	0.94	-50.0
NYS	33.75	20.50	Cray Research Inc.	29.88	0.00	0.0
NYS	11.88	6.63	Data General Corp. (L)	7.00	-0.75	-9.4
NYS	48.25	19.38	Digital Equipment Corp. (L)	18.50	-4.38	-18.4
NYS	52.25	33.88	Harris Corp	43.38	-0.50	1.1
NYS	60.00	40.63	IBM	59.00	5.63	10.5
OTC	25.75	2.75	Kendall Square Research (L)	3.00	-0.13	-4.0
NYS	175.88	113.91	Matsushita Electronics	165.00	1.50	-0.9
OTC	18.75	10.50	NetFrame	10.50	3.50	-25.0
OTC	26.00	6.38	Parallan Computer	9.93	-0.38	3.4
OTC	23.25	4.88	Pyramid Technology	8.00	0.00	0.0
OTC	13.75	11.25	Sequent Computer Sys	13.13	0.38	2.9
OTC	6.84	1.75	Sequoia Systems Inc.	5.63	0.22	4.1
NYS	41.25	20.25	Stratus Computer Inc.	23.25	1.50	-6.1
NYS	16.38	9.50	Tandem Computers Inc	11.88	1.88	12.6
OTC	50.00	11.75	TriCord Systems (L)	11.13	-0.13	-0.9
NYS	16.50	9.88	Unisys Corp	11.75	2.50	17.3
Software						**OFF 2.38%**
OTC	37.00	16.25	Adobe Systems Inc	25.00	0.75	3.1
OTC	34.50	13.50	Aldus Corp	27.25	0.63	2.3
OTC	8.88	5.00	American Software Inc	5.25	0.00	0.0
OTC	15.75	6.75	ASK Computer Systems	8.50	-0.25	2.9
OTC	61.75	37.00	Autodesk Inc	55.50	0.50	0.7
OTC	4.50	2.50	Bachman Info. Systems	2.50	0.25	11.2
OTC	38.00	20.50	BGS Systems Inc. (L)	22.63	1.63	7.7
OTC	71.00	42.00	BMC Software Inc.	61.00	-2.25	3.6
OTC	28.25	20.38	Boole & Babbage	75.56	1.56	6.5
OTC	27.75	12.00	Borland Int'l Inc	12.00	1.13	8.6
OTC	4.63	2.75	CE Software	3.38	0.13	3.9
ASE	30.34	15.41	Cheyenne Software Inc.	26.50	3.25	14.0
OTC	14.25	6.13	Cognos Inc	11.88	-0.50	-4.0
NYS	34.88	21.00	Computer Associates	30.25	-0.13	-0.4
NYS	5.38	2.13	Computervision Corp	3.50	0.63	25.2
OTC	48.25	21.00	Compuware Corp	44.00	1.88	4.5
OTC	12.75	5.75	Conshare Inc.	10.75	-0.25	2.3
OTC	23.00	4.88	Corel Corp	19.25	0.38	2.0
OTC	8.00	3.38	Easel Corp	4.50	-0.18	2.7
OTC	29.25	10.00	FileNet Corp	26.50	2.00	8.2
OTC	25.00	6.50	4th Dimension	7.50	-0.25	2.2
OTC	12.50	5.25	Frame Technology	30.75	-0.50	3.6
OTC	23.00	7.00	Group 1 Software	7.50	0.00	0.0
OTC	31.75	13.50	Gupta	22.50	-1.75	12.6
OTC	12.00	7.00	Hogan Systems Inc.	10.13	0.38	3.6
OTC	29.50	12.50	IMRS	23.75	2.25	-8.8
OTC	44.75	12.50	Information Resources	14.00	0.00	0.0
OTC	27.25	15.75	Informix Corp.	16.50	3.50	17.5
OTC	12.38	8.50	Intergraph Corp	8.50	0.50	-5.0
OTC	9.25	4.88	Interleaf Inc.	6.38	-0.38	5.6
OTC	15.50	6.75	Intersolv Inc	11.75	1.00	-7.0
OTC	10.75	7.75	KnowledgeWare Inc.	12.00	0.00	0.0
OTC	40.50	15.50	Legent Corp	28.75	1.25	4.6
OTC	86.50	23.50	Lotus Development	56.12	30.18	15.3
OTC	19.25	11.50	Magic Software Enterprises	13.00	0.75	6.1
OTC	11.75	3.88	MathSoft (L)	1.88	-0.29	-0.1
OTC	13.25	4.50	McAfee Associates	9.25	1.50	19.4
OTC	17.25	8.38	Mentor Graphics	13.75	-0.50	3.4
OTC	17.50	12.00	Micro Focus (L)	12.00	3.00	7.7
OTC	11.63	4.63	Micrografx Inc.	6.61	-0.50	7.0
OTC	98.00	70.38	Microsoft Corp	91.00	5.75	6.7
OTC	37.75	16.00	Oracle Corp	30.38	0.23	0.6
OTC	44.75	23.75	Parametric Technology	28.00	0.50	3.0
OTC	41.50	26.00	Peoplesoft	33.75	0.00	0.3
OTC	6.25	3.50	Phoenix Technologies	5.44	0.31	6.1
OTC	69.50	22.00	Powersoft	51.75	-5.75	-10.0
OTC	28.75	3.50	Platinum Software (L)	4.25	-5.50	-56.6
OTC	16.75	7.25	Platinum Technology	32.75	1.00	7.3
OTC	60.75	32.25	Progress Software Corp	67.25	2.00	4.4
OTC	4.00	1.94	Quarterdeck Office Sys.	2.75	-0.44	36.8
OTC	32.00	15.25	Rainbow Technologies Inc.	35.25	-0.25	1.0
OTC	11.50	4.75	Rasterops (L)	4.75	-0.25	5.0
OTC	14.50	4.50	Ross Systems	5.50	0.00	0.0
OTC	28.75	10.50	Sapiens Intl. Corp. N.V. (L)	11.38	0.11	1.1
OTC	24.00	9.75	Softkey International Inc	10.13	-0.75	-6.9
OTC	8.75	5.38	Software Publishing Corp.	5.38	0.13	2.3
OTC	17.75	7.00	Software Toolworks Inc.	14.53	0.16	1.1
OTC	13.75	6.25	State of the Art	7.25	0.50	7.4
NYS	35.63	17.63	Sterling Software Inc.	26.00	-2.18	-8.3
OTC	21.63	10.88	Struct. Dynamics Research	50.00	1.75	-13.9
OTC	51.25	25.75	Sybase Inc	48.50	3.25	7.2
OTC	20.00	10.88	Symantec Corp.	14.50	1.50	9.7
OTC	52.75	32.75	SynOpsys	36.75	-4.00	9.8
OTC	24.25	12.00	System Software Assoc	15.50	0.00	0.0
OTC	6.75	2.88	Trinzic Corp	4.00	0.38	8.6
OTC	30.00	14.25	Viewlogic Systems	26.75	-0.50	1.9
OTC	11.25	5.50	Walker Interactive Systems	6.63	0.61	7.8
OTC	60.88	12.75	Wall Data Inc.	38.50	2.50	6.0
Semiconductors						**UP**
NYS	32.75	14.75	Advanced Micro Devices	25.50	1.25	5.2
NYS	31.13	17.38	Analog Devices Inc.	26.25	0.00	0.0
OTC	25.21	8.50	Atmel Corp	22.75	0.11	0.6
OTC	7.50	2.88	Chips and Technologies	4.88	0.00	0.0
OTC	44.63	13.00	Cirrus Logic	32.38	4.61	-4.8
NYS	19.88	8.63	Cypress Semiconductor Corp	18.63	1.50	9.0
NYS	20.02	11.75	Dallas Semiconductor	18.75	1.50	7.8
OTC	74.50	42.75	Intel Corp.	60.50	0.25	0.4
NYS	21.00	20.50	LSI Logic Corp	28.00	3.75	9.6
OTC	26.75	22.25	Lattice Semiconductor	16.50	0.00	0.0
NYS	39.91	8.50	Micron Technology (H)	34.63	3.13	2.4
NYS	54.88	36.31	Motorola Inc.	46.38	1.31	2.9
NYS	35.00	12.00	National Semiconductor	19.63	0.88	4.7
OTC	10.13	6.50	Sierra Semiconductor	7.75	0.25	3.3
NYS	89.50	53.00	Texas Instruments	73.00	3.00	4.9
OTC	18.88	6.50	VLSI Technology	13.50	0.63	4.9
OTC	14.38	5.00	Weitek	5.00	-1.13	-18.4
ASE	20.50	3.63	Western Digital Corp	14.88	0.50	3.4
OTC	59.75	29.75	Xilinx	51.75	2.00	4.1
OTC	60.75	22.00	Zilog Inc	31.25	0.50	1.6
Peripherals and Subsystems						**OFF 2.44%**
OTC	30.50	12.75	American Power Conversion	22.25	1.13	4.8
OTC	24.75	17.13	Banctec Inc	23.50	1.50	6.8
OTC	8.00	3.50	Cambex Corp	3.50	-0.25	-6.7
ASE	8.75	3.13	Comptronix Corp (L)	3.13	-0.50	13.8
NYS	30.50	9.00	Conner Peripherals	14.00	-0.50	-3.1
OTC	39.25	17.50	Creative Technologies Inc.	24.00	1.00	4.3
OTC	25.00	6.50	Data Race Inc.	7.63	-0.63	7.4
ASE	12.63	4.50	Dataram Corp	6.50	0.50	10.0
NYS	23.00	8.97	EMC Corp	17.75	-0.75	-4.1
OTC	8.25	3.33	Emulex Corp	6.37	0.00	19.0
OTC	21.00	14.25	Evans & Sutherland	17.25	-0.13	-0.7
OTC	22.50	7.50	Exabyte	12.88	-1.13	3.9
OTC	34.00	7.50	Intelligent Info. Systems	8.50	0.25	3.0
OTC	5.13	2.25	Iomega Corp	2.38	-0.06	2.6
OTC	9.75	6.50	IPL Systems Inc	6.50	-0.25	3.7
OTC	28.50	13.75	Komag Inc.	23.75	1.30	5.9
OTC	8.63	4.38	Maxtor Corp	6.50	-0.75	10.3
OTC	8.75	4.88	Micropolis Corp	7.00	0.00	0.0
NYS	50.50	47.38	3M Corp (L)	47.38	-1.63	3.3
OTC	8.50	6.25	Printronix Inc.	8.38	0.63	8.1
NYS	26.50	7.50	QMS Inc	7.50	-0.50	8.3
OTC	20.25	9.38	Quantum Corp	16.00	0.56	3.6
OTC	9.13	2.13	Radius Inc	6.63	1.00	-13.3
NYS	12.75	10.75	Recognition International	10.75	3.00	22.8
OTC	8.88	3.63	Rexon Inc	5.63	-0.50	-8.2
OTC	28.75	14.38	Seagate Technology	24.56	0.88	3.7
NYS	45.00	21.75	Storage Technology	30.88	1.50	5.3
NYS	32.63	21.38	Tektronix Inc	31.75	-0.38	1.2
NYS	104.88	69.88	Xerox Corp	96.00	-3.75	-7.0
Services						**OFF 1.71%**
OTC	22.38	14.88	American Mgmt. Systems	20.50	0.00	0.0
NYS	6.25	2.38	Anacomp Inc	3.75	0.00	0.0
OTC	23.50	14.50	Analysts Int'l	15.75	-0.25	1.6
NYS	56.88	46.88	Auto Data Processing	49.88	1.13	2.2
OTC	18.25	7.50	Cambridge Tech. Partners	14.75	0.00	0.0
NYS	24.13	13.00	Ceridian Corp	24.13	1.75	-7.8
NYS	24.25	13.88	Comdisco Inc	20.13	0.18	0.6
OTC	17.50	4.66	Computer Horizons	9.75	1.00	-0.3
NYS	41.75	23.47	Computer Sciences	37.00	0.50	1.0
NYS	8.75	6.00	Computer Task Group	7.88	0.12	3.6
NYS	35.00	17.38	CompUSA Inc	17.88	-0.38	2.1
OTC	13.50	7.75	Control Data Systems Inc.	9.75	2.06	25.8
OTC	11.06	5.63	Egghead Discount Software	8.10	-0.06	-0.8
NYS	36.88	26.00	General Motors E (EDS)	34.63	-0.67	1.9
OTC	22.75	12.50	Inacom Corp (L)	13.00	-0.88	6.3
OTC	28.00	12.75	Intelligent Electronics	18.69	1.06	24.1
OTC	22.50	9.88	Medisel	14.06	-0.38	-2.2
OTC	32.50	8.14	Microage Inc	21.50	-0.75	3.4
OTC	40.50	23.84	Paychex	33.75	-0.75	3.3
NYS	45.25	21.63	Policy Management Sys.	27.13	1.88	6.5
NYS	24.88	16.00	Reynolds and Reynolds	21.88	-0.88	-4.0
OTC	28.50	24.13	SEI Corp	22.75	1.00	-4.2
OTC	29.38	17.50	Shared Medical Systems	25.88	1.50	5.5
OTC	12.63	5.63	SHL Systemhouse	6.62	-0.25	1.6
OTC	30.75	13.50	Software Spectrum Inc.	14.88	1.25	-8.2
OTC	42.75	28.00	Sungard Data Systems	34.00	1.25	3.5

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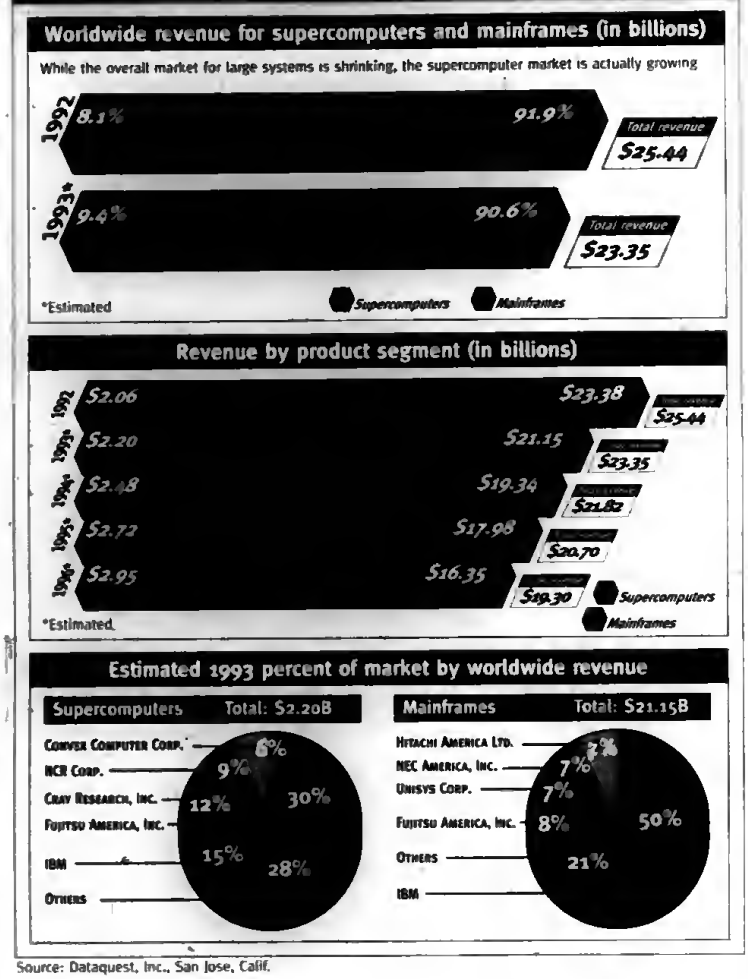
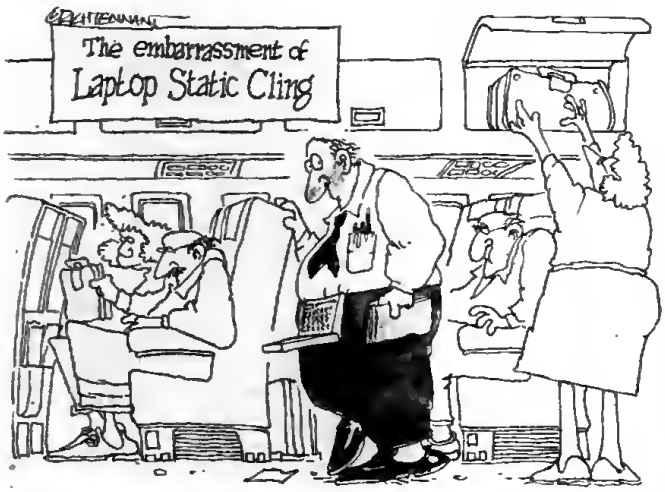
INDUSTRY PULSE: Large systems



Source: Dataquest, Inc., San Jose, Calif.

The 5th Wave *by* Rich Tennant



Inside Lines

Get 'em while they last

IBM recently told its sales force that supply constraints on water-cooled ES/9000 mainframes are not likely to end before August, according to a well-placed industry source. An IBM memo warned that mainframe shipment slots for the next few months are filling up quickly, the source said. Production cutbacks have left IBM unable to fill all of its mainframe requests since late 1993.

Bombs away . . .

Users at the Electronic Messaging Association conference last week were grumbling that Microsoft's group calendaring package, SchedulePlus, is a bomb on networks. It is a network-intense application that crashes some users' NetWare networks when it tries to access E-mail. Microsoft admitted the problem, saying that the program now reads and writes changes to the server. In Release 2.0, scheduling changes will be made to the local client and then synchronized with the server, thereby reducing traffic.

Grab a seat

Look for SynOptics Communications to lay out its switching strategy at next week's Interop show in Las Vegas. Sources close to the company said it will unveil four stand-alone, workgroup-level Ethernet switches at the show, followed by modular versions for the Lattis System 5000 superhub. SynOptics hailly needs to make its switching strategy clear to users "because it's getting its butt kicked by everyone," said one industry observer who asked not to be named.

Try, try again

After one false start, IBM's Personal Software Products division will finally launch PC DOS 6.3 at its OS/2 developer's conference in San Francisco later this month. IBM may also show off progress made on its Workplace Shell for DOS products, which are not expected to be delivered until summer, as well as a brief demonstration of the much-anticipated Workplace OS operating system and OS/2 2.2. The latter will feature newly built-in, peer-to-peer and OpenDoc capabilities. OS/2 2.2 is still slated for a third-quarter delivery.

HP to serve it up

On May 2, Hewlett-Packard is expected to release servers aimed at cutting into Compaq's market share and beating back Dell Computer's foray into higher market share. The HP LC will replace the LE series and will mark the first time HP has combined the Pentium chip and Peripheral Component Interconnect bus in a server. A full line of models will be available with support for both 486 processors and Pentium. With built-in network management, a base model, 25-user system will start at $3,500, said HP's Duane Zitzner, worldwide general manager of the server division.

Where is everyone?

If last week's San Francisco show was any indication, the Networks Expo show may be on its deathbed. On the second day of the show, exhibitors appeared to outnumber attendees by a wide margin. Crowds were so sparse that a break-out session that attracted a dozen or so show-goers was labeled a "major success" by the session's panel members.

The 1994 Computer Bowl All-Star Game will take place April 29 at the San Jose Civic Auditorium. The Bowl, which bills itself as the ultimate contest of computer knowledge between East and West Coast industry figures, is a fundraiser to benefit The Computer Museum in Boston. Among the players are Microsoft mogul Bill Gates and Mitch Kapor, chairman of the Electronic Frontier Foundation. For more information, call Shelly Gordon at (415) 325-6236. And to pass along any other news tips, please give us a call at Computerworld *on our 24-hour voicemail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*

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